AUGUST, 1907. Vol. LI. No. 354.

# JOURNAL

OF THE

# Royal United Service Institution.

PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL.

Editor - Captain H. GARBETT, R.N. (Retired),
To whom all communications should be addressed.

LONDON:

The Royal United Service Institution,
WHITEHALL, S.W.

Telegraphic Address: "RUSSATUS, LONDON."

Printed by J. J. KELIHER & CO., LIMITED, 32, New Bridge Street, E.C., and 33, King William Street, E.C.

Sole Advertisement Contractor: Mr. C. GILBERT-WOOD, Dacre House, Arundel Street, Strand, London, W.C.

*All rights reserved.*

Price Two Shillings.

# THE ELITE OF HAIR TONICS.

# JAVOL

## Best Hair Dressing for Daily Use.

Every Officer likes to have his Hair neat and well groomed, and there is nothing to equal JAVOL for this purpose. It Strengthens, Preserves and Nourishes the Hair and is delightful to use. It is a reliable article for every day use and is largely used by the Best People.

**1/- COUPON**

Entitles bearer to a 2/- flask of JAVOL for trial at 1/- on presentation to any Chemist —failing him send P.O. 1/- direct. 69

In Flasks, **5/6, 3/- & 2/-.**

Javol Shampoo, **3d. & 1/-** (box of **5**)

Of all Chemists.

**LAMONT, CORLISS & Co., 11, QUEEN VICTORIA STREET, LONDON, E.C.**

---

**50/-**

The
**Goldsmiths & Silversmiths Company's**

## NOTED "SERVICE" WATCH

**Manufactured expressly for Military Campaigning, and used under Service Conditions in all parts of the World with complete success.**

## Goldsmiths & Silversmiths Company, Ltd.

***Hundreds of these Watches have been sold to Officers and others serving on Active Service, with excellent results.***

**KEYLESS LEVER WATCH,**

jewelled in all holes, guaranteed a perfect timekeeper, in shallow and smooth case, from which it can only be removed by raising winding catch and unscrewing from the front, thus rendering it both dust & air tight.

| | |
|---|---|
| In Oxidised Steel Case ... ... | £2 10s. |
| In Solid Silver Case ... ... | £3 10s. |
| In 18-ct. Gold Case ... ... | £12 0s. |

**UNSOLICITED TESTIMONIA..**

"Please put enclosed Watch in a Silver Case The metal has, as you see, rusted considerably, but I am not surprised, as I wore it continually on my wrist for three months and a half. It kept most excellent time and never failed me.—Yours truly,

"Capt. North Staffs. Regt."

**WATCH LIST POST FREE.**

THE

# GOLDSMITHS & SILVERSMITHS COMPANY, LTD.

Watchmakers to the Admiralty,

***112 & 110, REGENT STREET, LONDON, W.***

TURKISH CIGARETTES.

RÉGIE DES TABACS
DE L'EMPIRE OTTOMAN.
CAPITAL - - - £4,000,000.

TURKISH RÉGIE CIGARETTES.

ALL HAND-MADE AT CONSTANTINOPLE.
UNEQUALLED FOR QUALITY, FLAVOUR, AND AROMA.
BY IMPERIAL CHARTER, the Régie have the exclusive right of Manufacturing and Selling Turkish Cigarettes in and out of the Ottoman Empire.
*All Cigarettes bear the Imperial Ottoman Arms as a guarantee of genuineness.*
Brands: SPECIAL, EN A'ALA, YAKA, NAZIR, SELAM.
Sold by all high-class Tobacconists at 3/6 to 11/- per 100.
Assorted Samples of Twelve Cigarettes will be sent post free upon receipt of Postal Order for 1s. by the
IMPERIAL OTTOMAN TOBACCO RÉGIE,
5, BEVIS MARKS, BISHOPSGATE, E.C.
*Telegrams* "GIUBEK, LONDON." *Telephone:* No. 12523 CENTRAL

*Telegraphic Address—*
"KUSSATUS, LONDON."

## CONTENTS FOR AUGUST, 1907.


| | | PAGE |
|---|---|---|
| 1. | THE NEW FRENCH FIRST-CLASS BATTLE-SHIP "JUSTICE," 14,865 TONS; 18,000-I.H.P.; SPEED, 18 KNOTS. | |
| 2. | SECRETARY'S NOTES ... ... ... ... ... ... ... ... | 947 |
| 3. | PHYSICAL TRAINING AND ITS ADVANTAGES. CAPTAIN H. T. CANTAN, DUKE OF CORNWALL'S LIGHT INFANTRY, LATE SUPERINTENDENT OF GYMNASIA, CURRAGH DISTRICT (*Lecture*) ... ... ... ... | 949 |
| 4. | COMBINED STRATEGY FOR FLEETS AND ARMIES; OR "AMPHIBIOUS STRATEGY." COLONEL C. G. ASTON, C.B., R.M.A. (*Lecture*) ... | 984 |
| 5. | OPINIONS WITH REGARD TO THE ATTACK OF ENTRENCHED POSITIONS. TRANSLATION OF REPORTS MADE BY THE DIVISIONAL CHIEFS OF STAFF OF THE SECOND JAPANESE ARMY, AND ISSUED TO THE OFFICERS OF THE MANCHURIAN ARMY IN NOVEMBER, 1904. COMMUNICATED BY THE GENERAL STAFF ... ... ... ... ... | 1005 |
| 6. | THE PASSAGE OF RIVERS BY SMALL BODIES OF MOUNTED TROOPS. CAPTAIN E. N. MOZLEY, R.E. ... ... ... ... ... ... | 1016 |
| 7. | WARS OF THE TURKS WITH THE GERMANS. LIEUT.-GENERAL F. H. TYRRELL, LATE INDIAN ARMY ... ... ... ... ... ... | 1024 |
| 8. | NAVAL NOTES ... ... ... ... ... ... ... ... ... | 1033 |
| 9. | MILITARY NOTES ... ... ... ... ... ... ... ... ... | 1044 |
| 10. | NAVAL AND MILITARY CALENDAR FOR JULY, 1907 ... ... ... | 1054 |
| 11. | CONTENTS OF FOREIGN JOURNALS FOR JULY, 1907 ... ... ... | 1055 |
| 12. | NOTICES OF BOOKS ... ... ... ... ... ... ... ... | 1062 |
| 13. | PRINCIPAL ADDITIONS TO LIBRARY IN JULY, 1907 ... ... ... | 1063 |


PALMER & Co.,

MILITARY BOOT MAKERS,

56, Maddox Street,
New Bond Street, W.

The business of P. ROUSE, late of 13, Opera Arcade, Pall Mall, S.W., is also carried on at this Address.

## THE HEALTH OF THE ARMY.

# THE HARTMANN STERILISER

Renders WATER Infected with GERMS of

***TYPHOID***
***DYSENTERY***
***CHOLERA***

WHOLESOME.

An ILLUSTRATED BOOKLET dealing with the above and its application in the GERMAN ARMY sent free upon receipt of card to

**LUDW. LOEWE & CO., LTD.,**
**30-2, Farringdon Road** (opp. 109),
LONDON, E.C.

---

# JEROME SACCONE, LTD.,

**GIBRALTAR, 33, Railway Street, CHATHAM, and 6, Bank Buildings, Elm Grove, Southsea, PORTSMOUTH.**

**WINE, SPIRIT and CIGAR MERCHANTS to the**
ARMY AND NAVY.

**Price Lists and Samples on Application.**
Wines shipped FREIGHT FREE to any Port in the Mediterranean or HALF FREIGHT TO INDIA and the Cape.

TELEGRAPHIC ADDRESS:—
"SACCONE, GIBRALTAR"; "SACCONE, CHATHAM"; "SACCONE, PORTSMOUTH."

---

## To Authors, Officers, &c.

Mr. C. GILBERT-WOOD (The Publisher of "The United Service Gazette," etc., etc.) is open to give expert advice on the Publication of NAVAL AND MILITARY BOOKS, and also to undertake the Printing, Binding, and Publishing of same.

For terms, write or call:—
THE GILBERT-WOOD PRESS,
Dacre House and Granville House, Arundel Street, Strand, London, W.C.,
Or 'phone 4680 Gerrard, or wire to "Gilberwood," London.

# ROYAL UNITED SERVICE INSTITUTION.

## PRESIDENT.

Field-Marshal H.R.H. The DUKE OF CONNAUGHT, K.G., &c.,
Inspector-General of the Forces.

## VICE-PRESIDENTS.

Admiral *Rt. Hon. Sir* J. C. DALRYMPLE-HAY, Bart., G.C.B., D.C.L., F.R.S.
General *Sir* F. C. A. STEPHENSON, G.C.B., Constable of the Tower.
Lieut.-Colonel T. H. BAYLIS (K.C., M.A.), V.D., late 18th Middlesex V.R.C.
Field-Marshal the *Viscount* WOLSELEY, K.P., G.C.B., O.M., G.C.S.I., G.C.I.E., (1905).
Field-Marshal the Right Hon. the *Earl* ROBERTS, V.C., K.G., K.P., G.C.B., O.M., G.C.S.I., G.C.I.E. (1905
Rear-Admiral *H.S.H. Prince Louis of* BATTENBERG, G.C.B., G.C.V.O., K.C.M.G., A.D.C. (1906.)

## CHAIRMAN.

Major-General Sir C. H. MARSHALL, K.C.B.

## VICE-CHAIRMAN.

Admiral of the Fleet the *Lord* WALTER TALBOT KERR, G.C.B.

## MEMBERS OF THE COUNCIL.

Colonel W. BARTIE, V.C., C.M.G., M.B. (Inspector of Medical Services).
Lieut.-General R. S. S. BADEN-POWELL, C.B.
Colonel the *Duke* of BEDFORD, K.G., 3rd Bn. The Bedfordshire Regiment.
Colonel J. H. BOR, C.M.G., R.M.A., A.D.C., Extra Equerry to H.R.H. The Prince of Wales.
Commander W. F. CARBORNE, C.B., Royal Naval Reserve.
Colonel T. S. CAVE, Commanding South Midland Volunteer Brigade, late 1st V.B. Hampshire Regiment.
Colonel R. B. COLVIN, C.B., Essex Imperial Yeomanry.
Brigadier-General C. G. DONALD, C.B., Commanding Home Counties Grouped Regimental Districts.
Rear-Admiral A. M. FIELD, F.R.S., Hydrographer of the Navy.
Major-General *Sir* T. FRASER, K.C.B., C.M.G.
Colonel LONSDALE A. HALE, late R.E.
Admiral *Sir* R. H. HARRIS, K.C.B., K.C.M.G.
Colonel J. A. L. HALDANE, C.B., D.S.O., A.D.M.O., War Office.
Colonel W. A. HILL, C.B., late 3rd Bn. The Gloucestershire Regiment.
Lieut.-Colonel C. E. H. HOBHOUSE, M.P., 3rd V.B. The Gloucestershire Regiment (Under Secretary of State for India).
Colonel W. C. HORSLEY, VD, 20th Middlesex V.R.C.
Major-General H. D. HUTCHINSON, C.S.I., Director of Staff Duties.
Colonel *Honble.* O. V. G. A. LUMLEY, half pay, late 11th Hussars.
Lieutenant G. R. MALTBY, M.V.O., R.N. (retd.)
Captain C. L. OTTLEY, M.V.O., R.N., Director of Naval Intelligence.
Brigadier-General *Sir* H. S. RAWLINSON, Bart, C.V.O. C.B., Commanding 2nd Infantry Brigade, Aldershot.
Captain E. J. W. SLADE, M.V.O., R.N.

*Secretary and Curator.*

Lieut.-Colonel A. LEETHAM, Royal Monmouthshire Royal Engineers (Militia), late 13th Hussars.

*Editor and Librarian.*

Captain H. J. G. GARRETT, R.N. (retired).

*Assistant Editor and Librarian.*

Major C. H. WYLLY, late 1st Bn. South Staffordshire Regiment.

*Assistant Secretary and Curator.*

Lieutenant B. E. SARGEAUNT, 22nd Middlesex V.R.C.

*Auditors.*

Messrs. WILDE & FERGUSON DAVIE, Chartered Accountants, 61½, Fore Street, E.C.

The undermentioned can become members by intimating their wish to the Secretary, and either forwarding to him their subscription, or giving him a written authority on their bankers or agents for its payments:—Commissioned officers of the Royal Navy, Regular Army, Royal Marines, Militia, Indian and Colonial Naval and Military Forces, Imperial Yeomanry, Royal Naval Reserve, Volunteer Corps, and Cadet Battalions and Corps, as published in the Official Navy and Army Lists, together with retired officers of the same whose names are retained in the Navy or Army Lists, and Naval Cadets, and Cadets of the Royal Military Academy, Woolwich, Royal Military College, Sandhurst, and Royal Military College, Kingston, Canada, on the recommendation of their commanding officers.

Officers retired from the various Services enumerated above, whose names do not appear in the Navy or Army Lists, are eligible for election by ballot on the recommendation, on personal knowledge, of two members of the Institution.

The terms of subscription are:—

Annual. £1 1s. 0d. entrance; and £1 1s. 0d. annual, payable on the 1st January each year.

Life. £15, payable in one sum.

Life. £15 15s., payable in three instalments of Five Guineas each; the first on joining the Institution, the others on the 1st January of each of the succeeding two years.

Members joining after the 1st October in any year are not called upon for any subscription the following year.

An extra payment of Ten Shillings entitles a member in the United Kingdom to the loan of Four Volumes at a time from the Library for a period of twelve months from the date of the subscription.

When a member desires to pay his subscription through his banker or agent, he should send to the Secretary a written authority as follows:—

*To (Banker or Agents).*

On receipt of this order please pay to Secretary, Royal United Service Institution, or order, my subscription to that Institution (according to the terms above).

*Name in full.*

*Rank, Ship, or Regiment.*

*Address to which Journals and other communications should be sent.*

The name of any member who fails to pay his annual subscription for two years is removed from the List of Members, but the member may be re-admitted as a new member on the usual terms.

Members of the United Service Institution of India on leave to the United Kingdom, and officers of the Colonial Naval and Military Forces who are temporarily in this country on duty, can become temporary members, and make use of the Institution on payment of Five Shillings per six months.

The Institution contains the best professional Library in the United Kingdom; an excellent collection of Maps and Charts; Reading and Smoking Rooms provided with the leading papers, periodicals, and writing materials; an interesting Museum; and a Theatre in which lectures upon professional subjects, followed by discussion, are frequently given.

The Journal, published monthly, is sent post free to all members. It contains the lectures given in the Theatre, articles on professional subjects, naval and military notes, book notices, &c,

## DRAIN & SEWER AIR INLET VALVE.

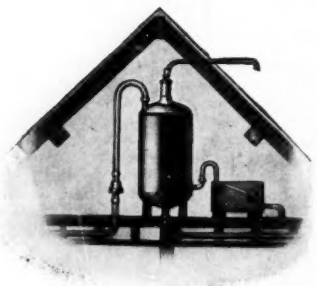
Sewer Gas can never escape.

Passed by the Metropolitan Water Board (New River section especially) and other Authorities.

"Special Tests." For the L.C.C. Schools a range of 5 for infants has been fixed. Each Closet or the whole range can be flushed with two gallons of water every 35 seconds.

"The Tollard Royal Hotel" is fitted throughout, Urinals with their offensive odours being obviated by "THE ONLY."

## NON-BALL VALVE COLD WATER.



No other System or Cistern has been awarded the

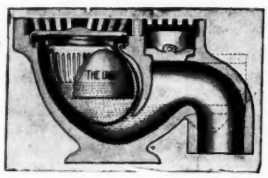
**ROYAL SANITARY INSTITUTE PRIZE MEDAL.**

This System, while providing a reserve supply in case of emergency, preserves the purity of the water, as dust, foreign matter, or foul air are excluded.

## PERFECT LIFT RETAINING AND FOOT VALVES.

Waste of power from slip, nil.

## SLAUGHTER HOUSE AND YARD GULLEY WITH ANTI-BACK FLOODING VALVE.



4-in. Anti-back Flooding Gulley Valves in Earthenware, from **30/-** each.

## AUTOMATIC FILLING, EMPTYING, AND CLEANSING CATTLE DRINKING TROUGH.

Each animal is provided with fresh water in less than two minutes. A sure preventive to the spread of Glanders.

# The Sanitary Appliances Syndicate, Ltd.,

**68, VICTORIA STREET, S.W.**

**(Makers of Grundy's Patents.)** **(Contractors to London County Council.)**

JUST PUBLISHED. **6d.** NET.

**A BOOK EVERYBODY SHOULD READ.**

# WARWICK PRISON OF TO-DAY.

By DAVID WATSON;

**WITH SELECTIONS OF PRISON VERSE.**

PREFACE BY THE REV. S. R. GLANVILL MURRAY, M.A.,
*Chaplain of H.M. Prison, Lewes, late Chaplain of H.M. Prison, Warwick.*

**PRICE, 6d. Net or Post Free, 7½d.**

PUBLISHED BY PERMISSION OF THE HOME OFFICE.

**The Most Complete Treatise on Prison Life that has ever yet been Published.**

APPRECIATIONS.

The MARQUIS OF HERTFORD, Lord Lieutenant of Warwickshire:—The account of Warwick Prison appears to be very complete and most interesting, and I am quite sure that it will prove of great value in aid of the Discharged Prisoners' Society.

The Right Rev. Dr. HOOK, Bishop of Kingston:—Interesting and useful. A work which ought to do much good. I think it shows clearly how the whole aim of prison discipline now is corrective rather than punitive. I hope that it will stir up many, and aid the necessary voluntary work which must come to the help of the prisoner after discharge, to give him the necessary fresh start in sober and honest life.

Rev. S. R. GLANVILL MURRAY, Chaplain, H.M. Prison, Lewes (late Warwick):—Most interesting. . . . I sincerely hope that its publication will be the means of interesting the public generally in the rescue work which is being carried on in their midst.

PRESS NOTICES.

The *Coventry Herald*:—Warwick Gaol is a County Institution about which some people know more than they care. On the other side are those, constituting, of course, by far the larger number, who know it only by repute. It is now possible, without any more trouble than is involved in purchasing "Warwick Prison of To-Day," for anyone to learn all they may desire about it. . . The work is interestingly written, and there are a number of good illustrations. The writer has some pleasant things to say of the administration of the gaol.

The *Glasgow Herald* says:—The criminal and the best means to be adopted by the State and other agencies for his reclamation as an honest and useful member of society are nowadays, such an important department of sociological study that Mr. Watson's interesting little book cannot fail to be interesting to a large circle of readers. The prison system being to a large extent uniform throughout the country, the description given is generally applicable all over Great Britain.

The *Dundee Advertiser*:—"Warwick Prison of To-Day," by David Watson, is a very interesting account of a visit paid to that famous penitentiary. The author describes the daily life of the prisoners, their occupations, and the conditions of existence within the walls of Warwick Prison. Especial prominence is given to the manner of conducting the State Inebriate Reformatory, a subject which, at the present moment, has particular interest for Dundee. There is an amusing chapter added, giving a selection from verses written in prison. Several fine illustrations of the interior of Warwick Prison have been given by permission of the Home Office.

The *Nottingham Daily Guardian* says:—Under the title "Warwick Prison of To-Day," there is published, by permission of the Home Office, a sixpenny booklet, giving an interesting account of the methods of prison treatment at the present day.

The *Oxford Times* says:—An interesting brochure, giving a detailed account of prison life. By comparison of the work under review with the horrible accounts of prison life of but a few decades ago, it is possible to appreciate the improvements, humane, yet but expected in an enlightened Christian country, which have taken place of recent years.

**London: C. GILBERT-WOOD, Arundel Street, W.C.**

# Mr. E. Carlisle, M.A. (Cantab.)

AND

# Major M. H. Gregson, late R.E.

**Prepare Candidates for the Navy and all Army and Civil Service Examinations, at**

**5 & 7, LEXHAM GARDENS, KENSINGTON, W.**

---

**We have retained the services of all the Tutors who have been so remarkably successful in past years, and continue to receive both resident and non-resident candidates.**

---

***RECENT SUCCESSES INCLUDE—***

## STAFF COLLEGE, AUGUST, 1906.

The following Officers, whose names are arranged in regimental order, were successful from us at the recent Competitive Examination for admission to the Staff College:—

Capt. C. Evans, R.F.A.
Capt. G. C. Merrick, D.S.O., R.G.A.
Capt. W. H. Moore, D.S.O., R.G.A.
Capt. J. P. Mackesy, R.E.
Capt. B. W. B. Bowdler, R.E.
Capt. F. D. Farquhar, D.S.O., Coldstream Gds.
*Capt. R. G. Parker, Royal Lancaster Regt.
Capt. G. N. T. Smyth-Osbourne, Devonshire R.
Capt. V. H. M. de la Fontaine, East Surrey R.
Capt. and Brev. Major F. R. Hicks, Hamps. R.
Capt. H. S. Williams, Dorsetshire Regt.
Capt. B. D. L. G. Anley, D.S.O., Essex Regt.
Capt. R. S. Hamilton-Grace, Durham L.I.
*Capt. H. F. Baillie, Seaforth Highlanders.
Capt. P. S. Allen, Gordon Highlanders.
Capt. J. K. Cochrane, Leinster Regt.
Capt. R. L. Ricketts, Indian Army.
Capt. W. K. Bourne, Indian Army.
Capt. F. W. Lumsden, Royal Marine Artillery.

And the following received nominations:—

Captain H. C. Bickford, 6th Dragoon Gds.
Captain C. J. C. Grant, Coldstream Gds.
Captain W. D. Wright, V.C., R.W. Surrey R
Captain C. H. Harington, D.S.O., Liverpool R.
Captain H. Wake, D.S.O., K.R.R. Corps.
Captain and Brev. Major N. J. G. Cameron, Cameron Highlanders.
Captain G. P. Grant, D.S.O., Indian Army.

---

## SANDHURST, JUNE, 1906.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FIRST | ... | A. G. Armstrong | 5,541 | 129th | ... | R. P. T. Ffrench | 3,827 |
| 48th | ... | H. G. Gauntlet | 4,515 | 181st | ... | C. W. Molony | 3,445 |
| 67th | ... | D. Macdonald | 4,299 | 186th | ... | P. J. I. Synnott | 3,386 |
| 89th | ... | W. G. Bagot-Chester | 4,115 | 190th | ... | R. M. Aylmer | 3,339 |
| 90th | ... | A. G. Ottley | 4,109 | 197th | ... | O. Gough | 3,262 |
| 93rd | ... | A. P. Williams-Freeman | 4,094 | 201st | ... | P. W. J. A. Stomm | 3,151 |
| 115th | ... | D. M. Black | 3,940 | 213th | ... | B. W. Molony | 2,881 |
| 125th | ... | W. J. King-King | 3,846 | | | | |

---

## WOOLWICH, JUNE, 1906.

31st ... J. S. Barkworth ... 6,483

DECEMBER, 1905.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SECOND | ... | H. G. MacGeorge | 7,196 | 16th | ... | R. Crofton | 6,330 |
| FOURTH | ... | G. Walton | 7,046 | 45th | ... | D. Stephenson | 5,899 |
| FIFTH | ... | H. A. Cox | 6,967 | 54th | ... | J. Kennedy | 5,711 |

This was the First Examination under the new regulations, and our pupils secured THREE out of the first FIVE places.

---

## MILITIA COMPETITIVE, MARCH, 1906.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A. E. Hardy | ... | ... | 2,304 | W. F. Anderson | ... | ... | 1,947 |
| N. H. Hutcheson | ... | ... | 2,105 | D. C. Robinson | ... | ... | 1,879 |
| *F. D. Frost | ... | ... | 1,949 | F. A. Bowring | ... | ... | 1,876 |

* Read partly at the Army College, Aldershot.

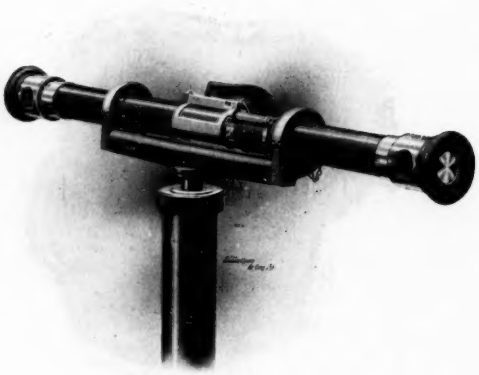
---

## ARMY QUALIFYING, 1906.

NINETEEN PASSED FROM US.

---

**Special Arrangements have been made for the next Examination.**



THE BARR AND STROUD RANGEFINDER. F.Q TYPE. 1 METRE BASE.

ON MOUNTING EM TYPE.

FOR NAVIGATIONAL AND STATION-KEEPING PURPOSES ON BOARD SHIP.

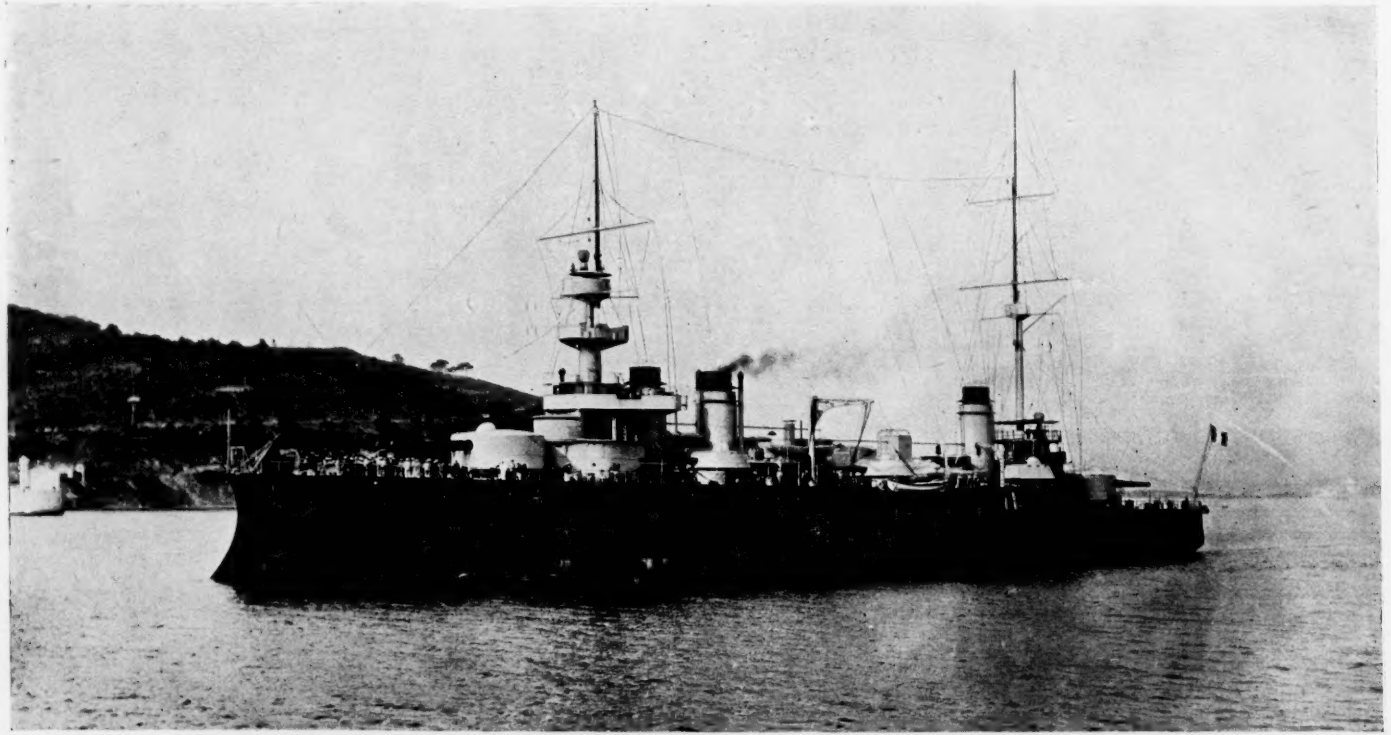
The Rangefinder is moved in altitude by rotation in the bearings of the mounting, and it rotates about the vertical spindle for azimuthal motion. The vertical spindle is carried on elastic supports to minimise the effects of vibration.

The mounting can readily be fixed to the stanchion of a hand rail.

Approximate uncertainty of observation:—

1 yard at 2 cables.
5 yards at 5 ,,
20 ,, 10 ,,

BARR AND STROUD,
ANNIESLAND,
GLASGOW



THE NEW FRENCH FIRST-CLASS BATTLE-SHIP "JUSTICE," 14,865 Tons; 18,000 I.H.P.; Speed 18 Knots.

ARMOUR PROTECTION.—H. Steel. Complete water line belt rising 8 feet above water line; 11 inches at water line and 9 feet 3 inches at top amidships; 7 inches forward; 5·5 inches aft. Main belt on bow reaches to 9 feet 9 inches below water, upper belt on bow to 8 feet 3 inches above water. Upper belt, on bow, 3 inches. Protected deck on top of belt, 2·4 inches. Lower protected deck, 2 inches on flat, 2·8 inches at ends, reinforcing belt. Main turrets, 12·8 inches to 4 inches. Other turrets and casemate, 6·3 inches to 4 inches.

ARMAMENT.—Four 12-inch 45-calibre breachloaders in pairs in turrets; ten 7·6-inch and eight 3·9-inch Q.F. guns; twenty-four 3-pounder Q.F. and two 1-pounder Q.F. Torpedo tubes, 5; three behind armour, two submerged.

*Photo by A. Bougault, Toulon.* *J. J. K. & Co., Limited, London.*

# THE JOURNAL
OF THE
# ROYAL UNITED SERVICE INSTITUTION.

VOL. LI. AUGUST, 1907. No. 354.


[*Authors alone are responsible for the contents of their respective Papers*].

## SECRETARY'S NOTES.

**1.** The following officers joined the Institution during the month of July:—

Lieutenant W. R. C. Moorsom, R.N.
Sub-Lieutenant B. D. Holberton, R.N.
Second Lieutenant G. A. Rickards, R.F.A.
Second Lieutenant G. K. F. Smith, Coldstream Guards.
Captain G. J. W. Smyth, R.E.
Captain W. G. Matthews, late Royal Dublin Fusiliers.
Major H. R. Palmer, R.G.A.
Captain D. Beatty, M.V.O., D.S.O., R.N.
Captain R. A. Slee, 6th Battalion Middlesex Regiment.

(No officer of the Royal Naval Reserve, Imperial Yeomanry, or Volunteers joined the Institution during the month.)

**2. JOURNAL INDEX.**—An index to Subjects and names of Authors appearing in the JOURNAL from 1887 to 1906 (Vols. XXXI. to L.) has been compiled, and may be obtained at a cost of one shilling (inclusive of postage) on application to the Secretary, Royal United Service Institution, Whitehall, S.W.

**3. REGIMENTAL COLOURS.**—The Secretary is prepared to arrange for repairs to Regimental Colours and Cavalry Standards, in service or otherwise, at the Institution. A very large number has already been received during the past three years, and the repairs are executed at as small a cost as possible.

**4. MUSEUM.**—The following additions have been made to the Museum:—

1. Coat of an Officer of the Third Irish Horse, or the Carabiniers, of the middle of the 18th century.
   *Given by John Seymour Lucas, Esq., R.A.*
2. An engraving showing "A View of the Privy Gardens and Banqueting House at Whitehall," in the reign of King James II.
3. An engraving, with description, of the George worn by King Charles I. on the day of his execution.
4. An engraving, by W. Miller, of the picture of the Battle of Trafalgar, painted by C. Stanfield, R.A.

**5. LENDING LIBRARY.**—Officers resident in the British Isles may borrow four volumes at a time from the Library on paying an extra subscription of ten shillings per annum. Further particulars will be sent on application.

**6. CHANGE OF RANK OR ADDRESS.**—The attention of members is called to the necessity for communicating any change of address or of rank to the Secretary. It is essential that such changes should be made in writing. If such changes are not notified, members will themselves be responsible if their JOURNALS fail to reach them through being wrongly addressed.

**7. WINTER ESSAYS.**—The attention of Officers is drawn to the new JOURNAL index lately printed and described above. Contained in it are references to almost every possible subject for these essays; the back numbers of the JOURNAL in which the papers appear can always be obtained at the Institution. The price of the Index is 1s.

# PHYSICAL TRAINING AND ITS ADVANTAGES.

*By Captain H. T. CANTAN, Duke of Cornwall's Light Infantry, Late Superintendent of Gymnasia, Curragh District.*

On Thursday, 8th November, 1906.
Major-General R. S. S. BADEN-POWELL, C.B., in the Chair.

IN giving this lecture on physical training, I am indebted, in a great measure, to M. Lagrange, Messrs. Sandow, Eustace Miles, Lieutenant Müller, Danish Army, and many other physiologists and athletes, for their ideas and views on this all-important subject.

It is only of late years that the nation and the Army have taken any interest in physical culture, and even that interest is not all that it might or ought to be, so that I hope and trust the views expressed, and the points raised on them, will interest and impress on you the vital importance of a "systematic and consistent" form of physical culture for all persons, especially for those who are required to be perfectly fit and strong at all times, such as the soldier.

I shall also touch on some laws of hygiene which are closely associated and allied with physical culture in its object, viz., "physical fitness."

The points raised are from a physiological point of view, and, I hope, are practical and sound.

Although the views expressed are generally known, and a good many of them as old as Adam, the saving clause in bringing them forward this afternoon is "the utter disregard shown by nearly all grades of society to them."

Let us look at the nation at large. Here we have physical culture in board schools, private and public schools, and in nearly every town of the British Isles physical culture classes for both sexes of all ages, and, above all, the all-important fact that this training is looked upon as absolutely necessary for the well-being of the individual and future generations.

In the Army, great strides have been made in physical culture, especially in the last ten years. The most important changes or advances being:—

1. More attention given to gymnastics without apparatus, such as leg exercises and free gymnastics.
2. Deep breathing.
3. Men to be trained practically all the year round.
4. Route marching, summer as well as winter.
5. Physical drill with arms made more practical.
6. Bayonet exercise very properly abolished.
7. Bayonet fighting put upon its proper level.

One might state, without fear of contradiction, that the advantages of this training are now recognised by all thinking people; especially so is this the case with our generals, commanding officers, and others, as compared with their attitude a few years ago.

A great many of us can remember the old days of a general's inspection on the barrack square. How the second-in-command would be called out to put the battalion through the manual exercises, followed by the bayonet exercise under the adjutant. How the whole beauty of the bayonet exercise consisted in all the points of the bayonets being in a line, all rifles at the proper angle at the parries, and, above all, every movement like clock work.

Physical drill with arms was another exercise, where time and proper angle of rifle to the front were some of the principal points looked to. No one ever thought of seeing what power and energy were put into these exercises. Would the point go through a piece of paper in the bayonet exercise, or were the men making the physical drill a physical exercise, or simply swinging to time without an ounce in their work?

All that is altered now; skill with the bayonet is necessary, as men are inspected in combats only, and physical training with arms is looked upon as a physical exercise, not a show parade.

In the old days I heard of battalions doing bayonet exercise to music. Probably some of you have seen this.

If I may be allowed to say so, I certainly think the 3rd Cavalry Brigade are moving in the right direction as regards the use of their swords. I say "use of their swords" instead of "sword exercise" because I consider anything approaching a laid-down exercise leads to shows and pomps, and I believe their general officer commanding does not want a laid-down exercise, but is endeavouring to teach practical swordsmanship on the attack and defence principle.

After all, you could not make a man a practical boxer by allowing him to punch the air only, he must have lessons in punching the ball, footwork, and attack and defence with a trainer and other men. So with the bayonet or sword.

It is a peculiar and sad fact, that in spite of all this recognition of the necessity of physical training of the nation, the British race at home is degenerating, at any rate, the larger portion, and especially the class from which we draw our recruits. Let us see if we can fathom the reasons for this degeneration.

## Reasons for Degeneration.

### 1. *Flow of People from Country to Large Communities.*

In a manufacturing country we have the steady flow of the country men and women to the towns; the higher wages and possibilities of a rise in their fortunes and walks of life attract them. No matter what the reasons are, this flow is a fact, and we need not worry ourselves over them; the majority of the people of the British Isles are so congregated together. What is the result of this congregating or gathering together in large communities? Loss of fresh air, life-giving fresh air, without which no man can be physically fit or live any length of time.

We also find that the youths of the large towns or cities do not go in for the same games as the country; do not walk or take exercise

as the country boys do; in fact, one might state, their whole life consists of the school, office, or workshop.

### 2. *Change of Diet.*

Change of diet has affected the nation at large in all walks of life. This is more noticeable with the working and labouring classes than with the others. In days gone by, I am afraid to say how long ago, people lived on good wholesome food, such as porridge, brown bread, fresh vegetables, cheese, meat, etc., drinking beer, cider, or water at dinner; now, we have the unwholesome white bread, tea drinking four or five times a day, and bad cooking.

In the towns, a great many married women work in factories, or at other work, away from their homes. This means either no cooking or very bad cooking, as the woman is too tired to cook well after her day's work. It is more than probable there will be a baby, a few months old, which will be farmed out by the day, having to exist on bottles of very bad milk and water, and not fed in the natural and most nourishing way, viz., by the breast.

We all acknowledge that if a colt is starved and badly looked after when young, it never develops into a good horse; with man it is the same. The baby I have just mentioned, in all probability, becomes one of our recruits.

The name of such women is legion.

### 3. *Emigration.*

Emigration is another source of degeneration; especially is this so in Ireland, from where all men of physique, muscle, sinew, grit, and energy emigrate, leaving behind those of lesser physique and grit, whose children, naturally, are not as strong as their forebears.

It is clear, then, that the town-bred man is physically the inferior of the country-bred man. From where do our recruits come? The answer is: large towns and cities. We can safely say, then, that the present standard of recruits is lower in physique than that of, say, 100 years ago, because recruits in those days were mostly from the country.

If physical training is now recognised as necessary for the nation, how much more so is it necessary for the soldier, and especially the weedy recruit, who is so young and mostly from large towns. Beyond a doubt, the first quality of a soldier is "physical fitness," without which a soldier is of no practical use to the State. A man may be an excellent shot, and good with the bayonet or sword, but if he is not physically fit of what use is he? The physically unfit man will rarely meet the enemy to try his skill in either arm because in nearly all our wars, or, for that matter, other wars as well, he will have to undergo great physical exertion in marching, etc., before meeting the enemy, and this he could not do, and would, of necessity, return to the base as an invalid.

To bring a man up to this physical fitness necessitates a knowledge of the methods of physical culture by all ranks, especially by officers and drill instructors on the square, as undoubtedly the work of the recruit outside the gymnasium assists materially to make or mar him. This also applies to the trained soldier.

In the September issue of the *Nineteenth Century* of this year (1906) Mr. A. Francis Walker writes an article on "Wasted Recruits," and quotes several well-known authorities as to the causes of this wastage. He says: "The main cause of this wastage is the abnormal position of the chest for 4 hours a day for 6 months, when the poor, unfortunate recruit has to walk about with a swelled chest. In consequence of the prevention of free respiration, the functions of the lungs and of the heart are very seriously interfered with; and the effects are cardiac irritability and hypertrophy of the heart, etc., etc."

I quite agree with the views expressed in this article, and have the greatest pity for the recruit or soldier who goes through the above torture.

Without doubt a good instructor in the gymnasium would not keep a man in this strained position when on the move; and when standing still, a man is always in the "Easy position," in which position he can move the arms, legs, or body about freely.

A point that all good instructors should look to is, that men should be able to breathe naturally "at all times"; this they cannot do if the chest is strained.

Undoubtedly, if all ranks understood the methods of physical culture and its effects on the body, such mistakes would not be made and these unnatural positions would be abolished.

This knowledge can easily be obtained from physiological works, such as that by M. Lagrange, and once read, never forgotten. It means only a few hours' reading, just the time taken up by reading three or four novels, and in that time, you can learn the effects of exercise, heat, baths, fatigue, etc. Probably, it may so impress you that you might be prevailed upon to carry out its suggestions, thereby obtaining a healthier and happier future.

This afternoon I propose to point out to you some of the effects of the above, in order that I may clearly show to you the errors so generally made; impress on you the necessity of careful training of men in all its branches, including hygiene; making certain changes in the physical training and positions of men during training; making the soldier's ration larger; better bath accommodation, etc.

Physical or bodily exercises have a stimulating action on all the organic functions, because the circulation of the blood in all the organs is rendered more active. The blood acting as a medium, makes all parts of the body share in the stimulation which the will has sent to the muscles, to put them in action, and this stimulation is the more marked because the blood is warmed by friction against the walls of the vessels through which it flows at a greater rate, warm blood being more stimulating. Thus, when the legs and arms move, the internal organs cannot remain quiet, the effect being that the whole organism performs its functions with "more energy" under the influence of muscular contraction.

Heat plays a great part in muscular exercise, the initial fact and indispensable condition of movement in the human body is the production of heat. The body produces heat by the combustion of its own materials, and this combustion of tissues is an expenditure necessitated by movement.

A bodily exercise is performed with more vigour and ease when heat has raised the temperature of the muscles; no doubt most of you have heard the following expression, when speaking of a man who is not going too strongly or too well in whatever he is doing:—

"Oh! wait till he is warmed up a bit." That expression really means a lot more than the speaker realises at the time; the worker will do much better when his blood is warmed up a bit. Take a weight lifter for instance, he will do some light work before attempting a strong lift. Why does he not try the strong lift at first? The reason is, that his muscles are not warm enough, and will not answer so readily to the action of the will as they would do if they were warmer.

We see here why the running man has a few preliminary sprints, and the horse a few canters before starting for their races; it is to give them heat, that they may be able to put their whole available vigour and muscular energy into their races from the very start.

In the gymnasium, for the very same reasons, men should be warmed up by giving them at the start leg exercises and free gymnastics, these exercises being light and not entailing much muscular exertion; after being warmed up they can be taken to stronger work, such as parallel bars, etc.

We see how necessary it is to warm men up for any exercise requiring a certain amount of strength, but there comes a time, if men are worked too hard or too continuously, when they obtain so much heat in their bodies that radiation from the surface of the body, and evaporation of the perspiration, no longer suffice to keep the temperature at its normal level. The over-heated blood poisons the nerve centres; the man whose body is overcharged with heat, owing to too prolonged exercise, dies in a condition similar to that of a man with sunstroke under a tropical sun. But how shall we know when we are overstepping the laws of nature and endangering our health, possibly our lives? The answer is: by fatigue.

Fatigue is, we can say, a kind of regulator, telling us when we are working or exercising too long, and bids us rest, or else the consequences, if the work is continued, will be dangerous. To continue to work until the muscles are completely exhausted, that is, when they can no longer contract, would have made these organs undergo such a profound disturbance of nutrition as to endanger the whole organism, as occurs in the hunted animal. The chemical composition of the muscles of animals in this state has undergone a great alteration.

Another general form of fatigue is breathlessness; it is an indication of great muscular exertion.

The principal cause of breathlessness is an excessive production of carbonic acid gas during exercise; there are two causes which assist: firstly, the disturbances of the respiratory movements produced by muscular exercise; and, secondly, by disturbance in the circulation of the blood, and the congestion of the lungs which these cause.

Now, carbonic acid gas is a form of dissimilation resulting from vital combustions, and as long as life lasts it is produced, but under normal conditions the lungs are capable of eliminating this poisonous gas. Let a man take violent exercise, and carbonic acid gas is formed to such an extent in the blood that the lungs working at the normal rate cannot get rid of the gas; nature, however, in spite of ourselves, causes the respiratory organs to move more quickly, or to be more active, and so the excessive gas is exhaled.

The intensity of breathing and the frequency of the respiratory movements vary with the amount of carbonic acid gas in the blood.

Take a man sleeping, the breathing is light and the movements slow, simply because less carbonic acid gas is being formed then than when awake.

The disturbance of the respiratory movements, the first of the two other causes, can be caused by any exercise when the muscles of the back or chest are used. These muscles can even stop breathing altogether, when the upper limbs are used, and the chest braced up, such as any strong exercise requiring effort. There are other causes of this disturbance, such as fright or fear.

The disturbance in the circulation of the blood, the second of the two other causes, is produced in the following manner: the blood during exercise is driven through the lungs by the heart with less force than in repose, but in compensation the frequency of the beat of the heart may be doubled, so that the work done is, on the whole, increased.

The blood driven forward less vigorously circulates less easily through the capillaries (the smallest blood vessels) of the lungs and causes a kind of stagnation, the small pulmonary vessels become over-distended. There is established a kind of congestion of the lungs, and these, engorged of blood, offer too small a space for the inspired air, and also form a hindrance to the blood circulation.

We now see what a great part in the cause of breathlessness carbonic acid gas plays, and how the quantity of acid is formed in proportion to the amount of force expended. Let us look at the difference of force expended in walking and running.

In walking the body is supported by the feet and never leaves the ground, whilst in running, at every stride, there is a time when both feet are off the ground, and the body is launched through the air by the muscular impulse which lifted it from the ground. This impulse, representing an enormous amount of work, is renewed three or four times a second.

Going upstairs, say, 30 or 40 steps, is another sure way of becoming breathless, especially to the untrained man, but I wonder if any of you have thought of the enormous amount of work your legs go through in mounting steps. It means that each leg in mounting, say, 30 steps, has to lift the whole weight of the body 15 times to the height of the step.

Let a man weigh 12 stones (1½ cwt.) and we get each leg lifting over a ton in a few seconds. Hill climbing can be looked upon as very arduous, requiring strong and trained men to perform it; it is something similar to mounting stairs in the lift, weight, etc., but, of course, entails less exertion.

Speed does not cause breathlessness nearly so much as the manner in which the body is moved. A horse galloping will become breathless or winded long before another horse trotting, although the speed may not be so much greater.

Muscular effort, then, of an intensity, is the main cause of breathlessness, and in teaching our men to run or double, the first point to look to is that they do so with the least amount of exertion or expenditure of force.

Do we do this when we have it laid down in "Infantry Training, 1905," that men should have their hands clenched and forearms horizontal? Let us see what happens when we follow the Drill Book and clench our hands, raising them level with the elbows in doing so. We find we use the muscles of the back, chest, and arms, or, at

any rate, bring them into play needlessly, and so generate a larger quantity of carbonic acid gas than we should if the arms were to hang loosely from the shoulder and allowed to swing naturally. This, in itself, would cause breathlessness in quicker time, but there is another point we must look at: by using the chest and back muscles we interfere with the play of walls of the chest; the ribs are unable to lift upwards and outwards as they would do if the muscles are not used; this, then, interferes with the breathing.

These two reasons should be sufficient to induce us to drop the laid down, stiff method, but a stronger inducement is given us in all first-class running men, who invariably run with their arms hanging down, swinging easily and naturally from the shoulder. As regards the corks they carried, no really first-class man gripped them, and of late years all the American cracks run with empty hands.

I purposely left the all-important part the skin plays as regards heat of the body and its functions until now, as I wanted to particularly impress you with the vital importance of keeping the skin clean. It is an excretory organ giving off perspiration and a little carbonic acid gas. The chief use of perspiration is the lowering of the temperature of the body. If the pores of the skin are closed for the want of cleansing, perspiration cannot take place, and so the temperature becomes abnormal; not only that, but the other excretory organs, the kidneys, and the lungs are called upon to do the work of the skin.

If the functions of the skin are wholly interrupted, death will ensue in the course of a few hours. All of you know the story of the little child in a procession at the accession of, I think, Pope Leo X., who represented the Golden Age by having its whole body gilded over. A few hours after the procession the child died in convulsions, poisoned.

Most first-class athletes, and certainly the old Grecian ones, put the skin as one of the most important organs of the body, to be looked after and treated carefully. I should advise all of you to read Lieutenant Müller's "My System," and see how he lays great stress on the cleanliness of the skin and the daily bath after exercise, to keep it in perfect order.

What are the means provided for this cleansing in the barracks? Are the baths in most barracks sufficient in number; kept open all day; supplied with hot water all day, and made inviting? I am afraid not. We all know the time taken up to keep these places clean for the various and numerous inspections. The only practical solution to this is, as suggested by Surgeon-General Evatt, to provide a spray bath room in every barracks, with hot and cold water laid on, and with sufficient sprays to accommodate several men at the same time. By these means, both hot and cold water will be saved as compared with the present wasteful large baths. Such a bath room should be open practically all day and during the evenings.

There are two kinds of movements made by the different parts and organs of the body, called "voluntary and involuntary," which I should now like to explain, and show how they affect work and fatigue.

The first-named—voluntary—are made by order of the will, and are the cause of fatigue; the second are unconscious movements, such as the heart beat, and respiratory movements, and do not fatigue us. It is simply wonderful when one comes to think

of all the work of the heart, and of that done by the muscles, which bring about the respiratory movements (breathing), and yet no feelings of fatigue. A good instance of this is a man suffering from St. Vitus's dance, and it also points out how muscles, ordinarily under the control of the will, have the same immunity from fatigue when they become involuntary. I wonder how long a man could perform the same movements as the above patient before stopping for a rest? He would not keep it up long, as the muscular exertion is tremendous, yet the sufferer will keep it up all day.

Another instance, a hypnotised man will hold a leg or an arm in very trying positions for a very long time without showing any undue exertion.

It is perfectly clear, then, that the same muscular work which produces fatigue when it is voluntary, no longer produces it when it is done without the aid, or rather intervention of the will, that is, when the brain does not associate in the performance of the action.

We now see that if we can bring voluntary movements as like involuntary movements as possible, we diminish fatigue considerably, and so enable men to prolong their work or marches. Take a cheerful companion for a walk, and the journey is over before one can realise it. Why? Simply because our attention has been taken off the walk, and the actual movements have been more or less involuntary. A band has the same effect, but as it is not always available, singing should be encouraged on the march. The Federal troops in the 1861-5 campaign in America sang a great deal on the march, and although practically untrained, made long and rapid marches. They found that singing lessened fatigue, and made the movements nearly involuntary.

By the above, I think, it can safely be said that if the muscular work is equal, the more the will is brought into play the more intense is the sensation of fatigue. An excellent example is the light dumb-bell exercise.

The state of mind affects work or marching to a marked degree. Men in good spirits will work or march far better than men depressed, and will not feel the fatigue so much. If men are depressed, they require something more than the will-power to make them go on; excitement or fear will do it.

Men marching towards the enemy, in the hopes of a fight, will not feel a long march; in retirement, before a victorious enemy, fear will urge most men on, but with a few it will only paralyse them.

Food affects fatigue to a great extent; a well-fed man (I do not mean a gorged man, but one who lives well and eats only assimilating food stuffs), will not feel fatigue like another, who is ill-fed. Possibly the ill-fed man is doing his work at the expense of the organism itself. For instance, if a man were to fast for two days, and then perform some violent or prolonged exercise, he would make them at the expense of the organism itself and the tissues which form it. On the other hand, if one takes violent or hard exercise immediately after a full meal, such as gymnastics immediately after dinner, the work of the stomach is interfered with. Digestion cannot be carried on.

To make the last part of this clearer (viz., indigestion caused by hard work immediately after a heavy meal), I must tell you that there are three calls made on the blood by different organs of the

body, the calls being as follows, and which are given in order of call or seniority, if you like to call it so:—

1. Brain.
2. Muscles.
3. Stomach and intestines.

To make it clearer still, if you take a meal and follow it immediately by muscular exercise, the muscles having the prior call on the blood take most of it for their work; in the same way, the brain takes some of the blood from the muscles or stomach when brought into play. The whole truth of the matter is, the blood has to do all this work, and if we bring any two or three of these organs into heavy work at the same time, one of them must suffer and not work properly. The unfortunate one that always suffers is the stomach, as we all know to our cost, especially brain workers, who may live not wisely but too well.

In training men one should know the effects of overwork, how it is produced, etc., so that a few words explaining them might be of use in preventing an occurrence of this nature.

A fatigue which is pushed to extreme measures is called overwork.

We have seen that the consequences of excessive work is the formation in the system of certain products of dissimilation, and that the general orders of fatigue are caused by a kind of intoxication of the body by those waste products; the injurious influence of which is felt until they are eliminated from the body by the excretory organs, viz., the skin, lungs, and kidneys. In the condition of overwork the organism is no longer able to fight against this too abundant supply of waste products, which the eliminating organs are incapable of removing.

The difference between fatigue and overwork is the difference of dose in the substances which poison the organism. The man who stops for want of breath after running for some time, is simply a man whose system is under the influence of passing intoxication with carbonic acid gas from exercise, but a horse, forced to gallop rapidly, and to keep it up until he drops down exhausted, dies overworked.

The horse dies from the effects of carbonic acid gas, which has saturated its system; with the man, the gas has been eliminated in time.

Carbonic acid gas is, of all the products of combustion, formed most readily and in largest quantities during work; if it gets the upper hand of any animal in the contest for its elimination, the fight is short and fatal.

A man over-running himself, or a horse galloping so quickly that it cannot breathe properly, is in a fair way to be poisoned. More carbonic acid gas accumulates in the lungs than can be eliminated; shortly, there is sufficient in the blood to produce the first symptoms of poisoning.

A short breathing space is all that is required to throw off the excess of gas; but to go on without this short halt means the increasing of the quantity of gas; the nerve centres are supplied with blood incapable of maintaining life, the heart muscle is impregnated with a substance which paralyses it, the circulation stops, and the animal dies.

There is another form of death through overwork, and yet not through breathlessness. Let us take the case of a hunted animal, say a stag, and see what happens.

The stag avoids being overcome by breathlessness by doubling, getting short rests or easy stretches in these doubles, but the excessive work gives rise to various products of dissimilation, which, after a time, become largely accumulated in the system. Most of these products are eliminated by the urine through the kidneys, a very slow process, taking hours, sometimes days, according to the amount of waste products. We now see that those waste-products cannot be eliminated through the proper channels, and so they interfere with the motor organs, and, in fact, the whole system by means of the blood.

After some hours the deer's legs become stiff, and the hounds gain. The reason of this is, that the deer is being poisoned by its own waste-products, its limbs are stiff, because the muscles have undergone a chemical decomposition under the influence of the heat of the work. Suppose, now, the stag throws the hounds off the scent, it is nearly certain to die from the consequences of the excessive running, which is overwork.

With men, we never hear of, or see, cases of overwork of this description; but we see innumerable cases of what can be termed chronic overwork or staleness.

Chronic overwork or staleness is due, like other overwork, to the impregnation of the system with the waste-products of work; but the course is not so rapid and the ending less fatal, because the dose of the poisonous substance is less considerable, the exercise producing them being less violent. Staleness is found in persons whose bodies are subjected to work too long sustained, or to fatigue too often repeated, and not followed by sufficiently long periods of rest.

Take a man who performs a certain amount of fatiguing work not above his powers. There is produced in his system the ordinary disturbances of fatigue and stiffness; he does the same work the following day, which would be before the waste-products of the day before have not all been eliminated; he, by this, adds to the waste-products and so increases the dose. The work is repeated day after day, until we find the man breaks down, the blood being poisoned to such a large extent that it causes a serious illness.

These illnesses, when caused by excessive work, are similar to typhoid fever, sometimes showing symptoms of great severity, which develop and disappear in a few days. If not too excessive, a general prostration is shown.

There is another form of illness caused more by overwork than by the sun, which, as M. Lagrange, the eminent French doctor and writer, says, is wrongly called sunstroke, when taking place in temperate zones. He goes on to say:—"We believe that two factors are needed to produce the sunstroke, from which a young soldier suffers when marching under an August sun. The sun is certainly one of the factors, but work is the other, and much the more important of the two."

It seems as if his statement is very true, when we consider who the men are who suffer in this way in the Army. Nearly all the cases occur in the infantry, where a lot of marching has to be done, and in the artillery, who work hard. Among the cavalry we rarely hear of a case, although the horses may suffer in this way.

In the case of infantry in France, it has been noticed that most of those men who suffer from this disorder are Reserve men, taken

out to manœuvres, *without any previous training*, such as marching, etc., and are, therefore, more liable to suffer from overwork.

Workers in the field do not suffer in this manner. Why is that? They work harder than the soldier, and are quite as exposed. We must look for the answer in the field workers themselves; they are harder and fitter men, their muscles are trained to stand work, without the excessive fatigue following.

A man may also become stale from work, which entails very little exertion, but requires long hours.

A machine, such as an engine, will go on continuously without rest, until it is used up entirely; engineers can give the length of life of a machine, but with us how different; the more one works, taking the requisite amount of rest, the fitter one becomes, and obtains greater powers of resistance; not only do we gain these, but we add considerably to our length of life.

The losses of the organs of the body are repaired by themselves; in fact, are added to; but that repairing can only take place in repose, and not during work, so that with us we see how careful we ought to be to give men the necessary repose after a certain amount of work.

Men who daily perform muscular work acquire the power of braving fatigue, and successfully striving against its most serious manifestations; but those who abstain from muscular work are generally those who become overworked. To be always able to brave fatigue, however, muscular exercise must be kept up regularly, no matter what the exercise, whether it be walking, running, gymnastics, or football, a too long rest from them will effectively predispose men to fatigue.

If we look at animal life we can see for ourselves the result of exercise and its hardening effects on all parts of the body. Take a horse, or any domestic animal, exercise is the only thing to harden it and make it fit; and in wild animals, those who live as beasts of prey, are far harder than the others, simply because they are always on foot, and have to watch and pursue their prey.

I am sure a good many of you saw the want of fitness, in other words, want of previous exercise, or training, in most of the reservemen who joined our regiments for the South African campaign. On first landing in South Africa they could not perform any marches of ordinary length, and it was only after a month or two in the country, and practically "a survival of the fittest," that they could make long marches. But what a different story we have as regards the Japanese reserve men. Mr. Kirkham, in his excellent lecture on the Russo-Japanese War, delivered at the Curragh about a year ago, informed us that these reserve men made themselves fit prior to rejoining the colours by marching, physical exercises, hill climbing, etc. I wonder how many of our reserve men did this, or, further, even thought of doing this, or if it were necessary, and yet we pride ourselves on being an athletic nation.

It was the same in the Tirah Expedition, our men could not march or climb the hills satisfactorily, so much so, that troops have been regularly trained in India in hill climbing since that expedition. In that war, I believe, a lot of the troops were brought up from the hot plains and naturally, through want of proper training, owing to the climate, practically unfit for such campaigning.

With regard to route marching, it seems to me absolutely necessary that some form of marching be done all the year round, or, better still, substitute cross-country running for the route marching, only doing sufficient marches to keep the feet hard and fit, and for march discipline. Even these marches should be short, and the recruits should be lightly equipped, in fact, in walking-out or clean fatigue dress. There is nothing so monotonous or gruelling as route marching, and little learnt by them, even if you do finish up with some tactical scheme, because all ranks are then too tired to be interested in the scheme.

The soldier would like cross-country running, and in going across country our would-be recruit (who is usually a town-bred man, and has never crossed a ditch, bank, or hedge) would learn to negotiate them in the easiest and quickest way.

If this route marching or running is not kept up during the spring and summer, the men are liable to become soft before the manœuvres begin in the autumn.

The 1st Battalion R.I. Fusiliers substituted cross-country running for route marching last winter and marched well on the manœuvres. I was informed by the adjutant that their march discipline on the first day was not as it might be, hence my suggestion that a certain number of marches be carried out.

Discomfort is lessened considerably by training. We all know there is a certain amount of discomfort with work, the pain of fatigue I mean, caused by the muscles aching; but in a well-trained man this is rarely felt, if at all only slightly, simply because his muscles have been brought to such a state of perfection that this sensation is not produced in him, or only to a small degree. A man who is hardened can stand pain better, and, generally speaking, is decidedly more courageous. When we want courage, we do not look for it in the effeminate tribes and nations, but in the hardy, exploring, and sporting races.

In the early part of my lecture I spoke about bad food, or want of food, being one of the reasons of the degeneration of the nation, and how it affects work; I would also again point out how necessary it is that a man must have sufficient food of the proper muscle-forming properties (proteid) to become physically fit; also, he should only eat food that he can assimilate, that is, easily digest, and of which the major portion is passed into the blood and does not go through the body in practically the same state or in its original form.

In ordinary language, he should only eat food that agrees with him, and that of sufficient quantities to keep him going.

One judges the amount of food necessary by the proteid (the muscle-forming substance) the food contains. An ordinary man requires 4 to 5 ounces of proteid. A man doing hard work, or a growing youth, requires more; in the same way, children require more proteid in proportion to man. Government rations contain roughly the following proteid:—

Meat 2 ozs. barely
Bread $\frac{4}{5}$
} $2\frac{4}{5}$ ozs.

So that it is necessary to make up the proteid from the messing money. Now, do those non-commissioned officers, looking after the messing book, for that matter the master cook, or those men running the regimental messes, understand the different values of food stuffs

sufficiently to allow for the deficiency of proteid? I am afraid not, and not only are they ignorant on the matter, but most ladies and officers are. All of this information can be obtained in the first few pages of any cookery book, and, as Mrs. Beeton's is one in general use, it can be found on pages 40, 41, and 42, Roman figures. What ladies present have read the valuable information given in the preliminary part of this book, such the chapters on "Science of Cookery, Cookery, Cooking Utensils, Choosing and Buying Provisions, etc."

For those non-commissioned officers and others interested in the men's cooking, I would recommend some of the following articles of diet, as not only containing a good supply of proteid (albumenoids), but other necessary constituents, such as fat, starch, mineral matter, etc.

All pulses, such as peas, beans, lentils, etc., cheese and oatmeal. They are cheap and good. Cheese is the ideal food, containing more proteid than any other food, milk runs into second place.

Further, I am of opinion that the recruit, a growing lad, ought to receive a larger ration than the present one; in fact, as they are usually so young, a good many considerably under 18 years of age, they ought to receive a larger ration for the first two years; certainly during their first six months' soldiering, when they are hard at it from morning to night.

It is a peculiar fact that we look after our horses by giving them extra food for extra work, the right assimilating food and so on, but with the man he is more or less allowed to thrive as best he may as regards his diet.

I hope most of you follow me and see why it is necessary to take a certain amount of proteid into the body. As Colonel Firth says, if one takes less proteid than is required, it simply means that the *output* in energy is greater than the *takein*, and the result of this is deterioration in condition.

Closely allied to the food question is the important matter of cooking, and the question of cooks. As a rule the cooking in the Army is not all that it might be; and why? Simply because our cooks are untrained men, chosen as such in a very haphazard manner. The man is not a cook, neither has he received lessons. Of course, the sergeant-master-cook has been through a course, and is duly qualified, but he is only one man, and food has to be cooked for 600 or 700 men.

Better means should be adopted of providing more trained men, or, better still, trained cooks.

Then again, the soldier breakfasts about 8 a.m., dines at 1 p.m., and has his last official meal for the day, tea, about 4.15 p.m. In most units, unless he purchases a supper in the coffee shop, he does not get any food from tea time to breakfast next day. This is not conducive to good physical fitness. No man should go without food all this time, especially as their tea consists of bread and tea, generally stewed, with, maybe, a small piece of butter for the bread. The tea and butter can be put to one side, as containing practically no sustenance, and the white bread might be better.

Why not give a supper at 6.30 or 7 p.m., consisting of something of a sustaining and appetising nature, such as lentil, pea, or bean soup, bread and cheese, etc., instead of tea at this early hour?

Some officers may say the soldier would not stay in for the supper, he prefers to go out in the town. A few might forego their suppers

and go out in the town early, but the majority, especially the recruits, would, I think, stay in for it.

Crime might be lessened by having this supper. We all know how quickly a little intoxicating drink affects a man who drinks with an empty stomach. Do not you think a lot of the soldiers' drunkenness in town is caused more by the empty stomach than the excessive liquor taken?

Why should not the cookhouse be kept open for the benefit of the regiment? Now, it is usually cleaned up and closed by 5 p.m., or a little after that time, for the benefit of 6 or 7 men, the master-cook and his assistants.

It is as well to remember that all alcoholic drinks, tea, coffee, and cocoa are purely stimulants, and contain not an atom of nourishment, and if taken immoderately, or of too strong a character, are very bad for one's digestion. Really, I think tea is as large a curse as whiskey or beer. Three women out of four are suffering from its effects, and, in consequence, the future generation will also feel its effects by being weaker.

We will now look into the right and wrong ways of eating food, and so making the most or least of these foods. It is highly essential that one's food is well masticated, and so, well mixed with the saliva.

To eat properly, one should not have to force one's self to swallow food, but it should be swallowed or disappear without effort on one's part.

Nature supplies us with teeth for mastication, and meant us to use them properly. It also meant us to look after them, keep them clean and fit for work. Most people look after their arms, hands, etc., but a great many neglect their teeth.

Why should they? Especially soldiers, who can go to a military dentist and be put right without payment.

As a matter of fact, the stomach cannot digest food properly unless it is well masticated and mixed with saliva, and naturally rebels against the awful work some people impose upon it with the consequence these same people suffer from indigestion of all sorts, headaches, etc. We can safely say that the stomach, or rather improper use of same, is the cause of most complaints.

Fresh air is absolutely necessary to all men and animals by night as well as day, if they wish to be properly fit.

Be in the fresh air as much as possible; do as much of the physical training as you can in the open air; if working in a room or gymnasium, all doors and windows should be wide open. By night, windows ought to be open, winter or summer, but as the average soldier objects to such treatment, and prefers a hot and stuffy room, then all rooms should be better ventilated, larger and more ventilators should be supplied to each room.

Few people realise the benefits derived from sunshine.

Whenever you can, be out in the sunshine, let the sun shine into your rooms; in fact, treat him as a close friend in this climate, and keep him with you as long as possible.

Unfortunately, we do not see much of him in this country. Fresh air and sunlight are cures for many ailments, and they are certainly preventatives.

Again I would point out the necessity of great cleanliness of the body, frequent baths, washing of hands before meals, and not only cleanliness of body but cleanliness of the mind. Given a man

with a clean, healthy mind, and ordinary physique, and he, invariably, will be an athlete of some sort. I have met many of such in my time, and they were all good men.

Sport of every sort and kind should be encouraged in every unit. Sport in which most of the men can join such as football, cross-country running, cricket, hockey, swimming, etc. These games keep men in the open air and away from the barracks, which, unfortunately, are usually built in towns. If necessary, garrison fields close to the barracks should be provided.

Such games as I have just mentioned train the men physically and mentally, give them self-reliance, make them quick to take advantage of any faults in their adversaries, make them resourceful, and give them confidence in the abilities of their comrades, a highly necessary thing in war.

Bayonet fighting should be looked upon as a kind of sport. Foil fencing and sabre play is, why not bayonet fighting? After men are able to use a bayonet fairly well, they like it.

Schools of gymnasia might be open with great advantage to the men, say from 5.30 p.m. to 9 or 9.30 p.m., instead of the hour or hour-and-a-half as now, for voluntary attendance; and these schools should be looked upon by the men, in these hours, as purely recreation or athletic rooms, and men should be encouraged to attend them as much as possible. The expense would not be much greater than now, only a little more gas or oil in winter, and possibly some more coal; anyhow, I am sure such expenditure would be amply repaid by the physical fitness of the men, and saving of loathsome diseases, etc., by keeping men from the towns.

The 1st Battalion R.I. Fusiliers are very keen on all games for their men, especially in winter, and keep their modified school of gymnasia at Wellington Barracks, Dublin, open during the above hours. Their adjutant wrote me the other day, that on Thursday night, the 4th September, "the best part of 200 men attended the gymnasium voluntarily." He went on to say: "Every single non-commissioned officer, with a certificate, has—as a duty—to attend certain hours on certain days in the evening. It is an understood thing in the regiment that when a man is sent to the Curragh (to qualify as an instructor), he is sent entirely for the good of his regiment and not for himself.

"I tell them the regiment lives by athletics, and that it is their bounden duty to, at once on their return, give every possible assistance to the men in the evening. It works admirably."

No words of mine are needed after the above facts, especially after the athletic records of this battalion for the past year and more, especially when one thinks of the temptations of large towns, such as Dublin; still, I cannot let these strong points, in favour of opening schools of gymnasia as suggested, pass without drawing the attention of the War Office to them, and strongly urging that body to grant such small extra expenditure in coal, gas, or oil.

There has been a great deal of discussion on deep breathing and its disastrous results with recruits. Deep breathing, if done with a strain, is undoubtedly harmful, but I should say to breathe fully, that is, to take in a full or deep breath quietly without strain, would be of great benefit to one's body by giving the blood a larger supply of oxygen, and would also develop the respiratory organs.

Deep breathing should always be done in the open air, or in front of open windows or doors. Care should be taken that dust is not flying about.

As to smoking affecting physical training, there are differences of opinion. Of one thing we are certain, cigarette smoking as indulged in by the recruit before breakfast, meals, and physical exercises affects the heart. The medical officer of recruits in Ireland has put back a lot of recruits in the Curragh District suffering from irritability of the heart caused by excessive smoking of nasty and cheap cigarettes. He said that if the excessive smoking and the hard physical training had both continued, something serious might have developed. I trust some of the officers of the R.A.M. Corps will speak on this matter and give us their views.

I would impress on all the great necessitv of clean and warm clothing. One must remember that the skin is throwing off large quantities of poison at all times. This is collected, to a great extent, by the clothing, and naturally, if the latter is not changed, it becomes very unwholesome.

When working, it matters very little what a man wears so long as he keeps warm during the work and changes immediately after; if, however, he cannot change, as in the case of a soldier undergoing his physical training, then there is only one proper shirt to work in, viz., a flannel one.

With a flannel shirt a man can sweat and not feel anv evil effects from not changing it, but with a cotton or linen one, the after effects are very different, chills, colds, etc., often occurring.

After sweating and at the finish of their work, men should dress quickly.

Even with the flannel shirt I am very much in favour of men changing them, but in warm weather advocate working in trousers only.

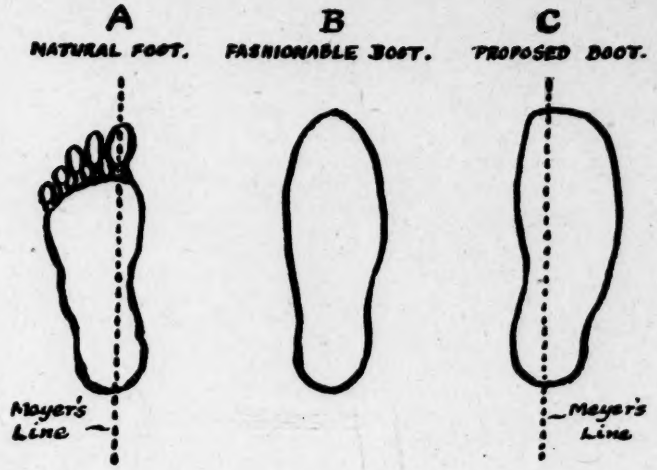
A matter that is very little thought about, and certainly never looked after, is the care of feet by wearing properly constructed boots. It is a fact that fully 95 per cent. of men, and 100 per cent. of women have, more or less, distorted feet through wearing boots either too narrow, short, or pointed at the toes.

No member of the body is so much distorted and spoilt by unscientific clothing as the foot, yet it is a member on which we are making heavy demands, and which has to bear and move the weight of the whole body.

Have you ever noticed the position of the big toe of a baby or young child when not in a sock or boot, and when the foot is flat on the ground? It is invariably pointing straight to the front, as in diagram "A." You will notice a dotted line drawn from the centre of the heel, straight through the big toe to the tip of the same. This is called the Meyers line, and if the big toe is natural, the push off when walking or running is by the big toe along this line.

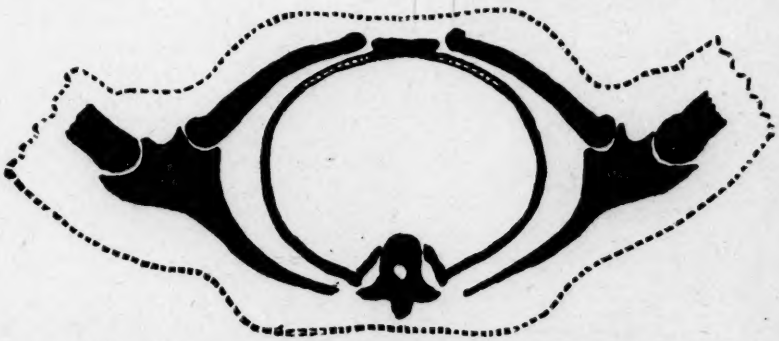
But, unfortunately, the boot trade and fashion say our boots must be pointed at the centre of the sole (as diagram B), and tight over the toes. What do these idiosyncracies entail?

1. The forcing of the big toe out of the Meyers line towards the centre of the foot.
2. Undue pressure and restraint on the outside of the big toe and above it.



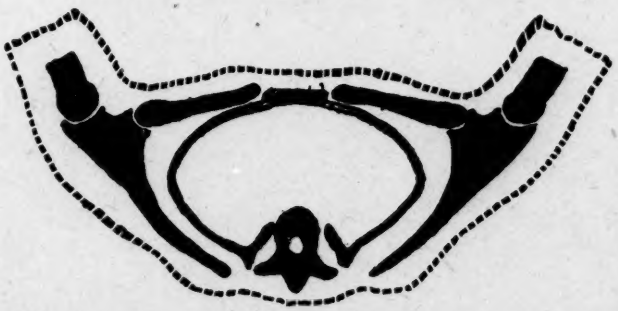

A

HEALTHY CHEST SECTION



B

CONSUMPTIVE CHEST SECTION



3. Constraint of the other toes with the usual result of corns, bunions, etc.
4. Atrophy or non-development of all the muscles of the toes, especially the seven muscles of the big toe.

To guard against such sins, I may safely say sins, boots should be cut straight on the inside, thus enabling the big toe to lie naturally on the sole of the boot and not pushed to one side. Greater room should be given immediately over the big toe, in fact, the fulness in the upper should be over that toe, and not in the centre of the boot. The point of the sole ought to be on the inner side of boot (as diagram C), in front of the big toe, and not as now in front of the centre of all the toes.

I would strongly urge that the regulation boot be made on these lines. I am sure all doctors present will agree that boots made on these lines are necessary for proper development of the feet and good marching.

If any of you gentlemen want to see the awful effects of fashion and the boot trade, I would ask you to go to your boot maker and look through their books on which they take their drawings, or rather plans of their customers' feet. I did this in Dublin some 8 or 10 years ago, and the plans were truly awful. There were drawings there that one could liken to anything you like to mention, except feet. Or, inspect the feet of your men, they will educate you on this point.

Your attention is now drawn to the two sections of the chest walls of very different men. In section "A" you have a fine deep-chested man, one who has grand lungs and a large heart, a man who has been well nurtured and fed from conception to full growth, and who has taken plenty of walking and running exercises. Notice the depth from front to back, and the roundness of the section. This man, if fit otherwise, could march great distances without any undue fatigue.

In section "B" we have either the consumptive man or one predisposed to that awful disease. Here, we have no depth, the chest is flat, the lung capacity is very small, and, as is the case with all consumptive people, the heart is also very small.

There are a great many reasons for these weaknesses or non-developments, the primary ones are: want of nourishing and proper food from birth upwards; want of walking and running exercises from childhood; and bad positions taken up at the desk in the schools, office, trade, etc.

All children should be encouraged to run as much as possible (there is no finer exercise for development of the heart and lungs), and whilst at school the time at the desk or lesson should be restricted to short periods of not more than three-quarters of an hour, followed by a run or exercise of some sort.

It is downright cruelty to keep children hard at it in, more or less, the same position for a couple of hours whilst at lessons. Intermix the lessons with exercise and your children will be healthier and more clever.

Great care and discrimination should be used when working men at any apparatus, such as parallel and horizontal bars and bridge ladder.

Up to date, I am afraid the average instructor has not used his common sense in dealing with the vastly differently constituted

recruits. As a matter of fact, if the instructor could only make the recruit keen on the work, and take an interest in his own physical development, a great deal of the apparatus work might be done away with, and most of the work done with so-called Swedish free standing exercises, bayonet fighting, high and long jumping, obstacle and rope climbing, and vaulting horse, as introduced by Colonel Fox in my time, at depôts; but in obtaining the recruit's interest, of the present type, in his own physical and mental development lies the difficulty. A large percentage of them would, I am afraid, scamp the work if of such a nature. They would not put the necessary go and energy into it. However, as apparatus work is still given to the men, it certainly should not be given to the weedy, soft boy, who would deteriorate under such work. We get a good many of this kind, and undoubtedly are inclined to overdo the work on apparatuses with them.

Colonel Malcolm Fox, late Inspector of Army Gymnasia, and now H.M. Inspector of Physical Training to the Board of Education, told me some time ago that a rational system of educational gymnastics was being gradually introduced into all the elementary schools of England and Wales, with very good results, and that he hoped the Army would, as is already done in the Navy, train their men on the same lines. If such a thing comes to pass, and I do not see why it should not, being feasible, it will confer great blessings on the future generations by raising the physical standard of the people.

The greatest difficulty that one finds with the physical development of a soldier is the "*Want of Consistent Training.*" I am not referring so much to the recruit's training, viz., his 5½ months' training on first joining—although this is interfered with a lot—but to his training after being dismissed. What with cooks, orderlies, clerks, servants, grooms, etc., there are a lot of men in most units who do not take any exercise, if any, very little. They cannot be physically fit.

Then, again, in the winter, companies are supposed to attend the gymnasium twice weekly. On such attendances, I have seen a half-battalion represented by 6 or 7 files of men and a few officers and sergeants. Where was the remainder of the half-battalion? On some duty, fatigue, or employment. These employed men actually require more physical training than the duty soldier, as their occupations are of a very light or sedentary nature.

The day will come when all officers will look upon physical training, or culture, as the primary and most important work of the soldier, and will make every endeavour that all men are consistently trained. Then, and then only, shall we have units more or less ready to take the field at a moment's notice. "Without consistent training no man can be fit and healthy."

The most expensive diseases to the Army are, undoubtedly, venereal diseases. It is surprising to see the number of soldiers lost to the State by these diseases, temporarily and permanently, and a few words on these diseases might be of assistance to the young soldier. It must not be lost sight of that every trained soldier invalided means a loss to the State of anything from £100 to £200.

What good is done in priding ourselves, like the Pharisees of old, on being better, morally, than other nations? Such things are bound to occur where large numbers of men are congregated together, and, in spite of all the teachings of the Social Purity Associations, men—I do not say soldiers, but men—will always have intercourse

with such women. It is, therefore, our place to fight such inclinations as much as lies in our power. Let us, then, make the soldier's life as happy as possible in barracks, by encouraging games of all kinds, both in the gymnasium and out in the fields.

In fact, make him a finer being, physically, and, as a natural consequence, his morals will improve. That is the main point we should strive after, to physically and morally raise the tone of our men.

The number of admittances to hospital for venereal diseases in large towns is very bad, but in India it is appalling. Why should not our medical officers lecture our men on prevention of this disease, at the same time pointing out its awful effects, both at the time of contraction, and, maybe, years afterwards? How many soldiers know that by neglect in curing this disease, or by concealment of it, they may be laying the seeds of insanity and paralysis, which may come on 20 years after? Not only are they affected personally, but what about their future children? Most men look forward to the time of marriage. How can they marry, having this disease in their system, with every possibility that their children will be born suffering in some way from its effects?

Surgeon-Captain McCabe, South of Ireland Imperial Yeomanry, in his four excellent lectures on "War with Disease," mentions a means of prevention of this disease by washing with a solution of crystals of permanganate of potash, immediately after intercourse. His four lectures should be read by all officers of the Army, and to all ranks; but, better still, why should not our medical officers give lectures on hygiene, prevention of disease, sanitation, etc., to the soldier, commencing at depôts, and continued at the battalion or regiment? I am sure a great deal of good would be done by such lectures.

Lieut.-Colonel Butt, the Medical Inspector of Recruits, Irish Command, started these lectures for recruits some months ago, but they are sorely needed for the trained soldier as well.

When inspecting recruits during my term of service as Superintendent of Gymnasia, Curragh District, I always spoke to them on some of these matters, such as advantages of physical training, necessity of eating properly, cleanliness of body and mind, bad effects of drinking, etc., and so obtained a certain amount of experience in talking to the recruit. If I may be allowed to say so, care should be taken not to talk over their heads. To make it interesting to the recruit, and so that he can understand you, long or technical words should be avoided. I have heard such expressions as "Intestinal canals, mastication, respiratory movements, etc.," used in lectures to soldiers, without explanations of such terms. Do you think they can understand such terms? I am afraid the average soldier could not.

To have perfectly trained men it is absolutely necessary that the instructors be of the best, and well-trained themselves.

Non-commissioned officers proceeding to the Curragh, to be trained as instructors, should be chosen for their aptitude in imparting instruction and instructing recruits in a sound and matter-of-fact way. Parrots are not required, but men of common-sense, good physique, and well educated, who are capable of seeing, checking, and correcting faults in recruits. They should also be of a certain age, and certainly not boys, just promoted lance-corporals, to go through the course. Of the last, a great number have been sent through this course, generally because they happen to be good gymnasts. It is

forgotten by a great many commanding officers that these non-commissioned officers are coming back to them as "Instructors," not somersault throwers, so why not send intelligent as well as active non-commissioned officers, who are, as I have already said, good instructors or drills.

I have been told by many regimental officers that the gymnastic course is the finest training for making young non-commissioned officers into good drills. If that is so, what could be done with finer material in the shape of older and experienced non-commissioned officers?

The following are some hints to officers, instructors, and others that might be of use to them in the future, when training themselves or their men:—

### Summary and Hints to Officers, Instructors, and Others.

1. At the commencement of physical work, warm your men up by giving them light exercises.

2. Remember no two men are physically and mentally alike, so use your discretion as to amount of work given to each man.

3. With very weak men, apparatus work, such as parallel and horizontal bars, should be given sparingly, if at all, and certainly not to children or young boys.

4. Never overtire or tax your men. You will gain your object, viz., "Physical Fitness," by light and continuous work, giving them the necessary rest between and after exercises for recouping purposes.

5. Do not keep your men in unnatural positions, and take care they breathe naturally at all times by avoiding all exercises which tend to check respiration.

6. Teach men deep breathing, without strain, in the open air or in front of an open window or door. Dust should not be flying about.

7. General activity is more our aim than big muscles and slow movements.

8. Work in the open air as much as possible.

9. If in gymnasium or a room, work with all doors and windows open.

10. Make work in the gymnasium progressive, it will then be interesting to the men. Encourage a spirit of rivalry in everything.

11. Vary your work as much as possible by bringing different muscles into play; no two exercises using the same muscles should follow each other; for instance: pulling on horizontal bar and climbing the rope.

12. Impress on recruits the necessity of eating wholesome food; taking warm baths; keeping the body (inside by regular evacuations, and outside, skin, teeth, hands, etc.) clean; clean and warm clothing; dangers of drink, and still greater dangers of cheap cigarette smoking; proper methods of eating; present and future dangers of venereal diseases, etc.

13. The weight of the recruit is, generally speaking, a good test of physical improvement; if the work agrees with him he gains weight, and loses if overworked.

14. In physical exercises, vigour and energy should be studied; time is a secondary consideration.

15. When running, arms should swing easily, and naturally, from the shoulder, similar to most first-class runners, with body inclined forwards.

16. Singing on the line of march should be encouraged much more than it is at present.

17. Give soldiers fresh air:—

By day, encourage outdoor games.

By night, rooms might be better ventilated.

18. Encourage men to spend more time on physical exercises, such as running, jumping, obstacle climbing, bayonet fighting, hockey, football, cricket, etc.

19. Tire men at work, games, etc., and they lose their liking for the city, its public houses, prostitutes, etc.

20. If men are sore and stiff from fatigue, rest them or give them lighter work. Remember you only add to the poison in the body (cause of soreness) by keeping the heavy work up.

21. That physical fitness can only be "obtained and retained" by consistent training.

22. Send some of your best and experienced non-commissioned officers to be trained as instructors.

### For the Consideration of Higher Authority.

23. Better bath accommodation for the men. Sprays recommended.

24. Extra food as a ration to recruits is necessary, especially for very young ones. Recommend extra ration consist of cheese, peas, beans, lentils, etc., which could be used for supper in place of tea.

25. Skill-at-arms prizes for bayonet fighting would encourage men very much in that grand developing exercise.

26. Officers might be taught hygiene, physiology, etc., not deeply but sufficiently to carry them through their present work (peace and war).

27. A properly constructed marching boot should be provided. One cut straight on the inside, giving more play over the big toe, with point at big toe, and not in front of centre of toes, as now made.

28. Swimming should be encouraged by the authorities, providing covered-in swimming baths at all large camps or garrisons, as at Aldershot.

29. Athletic or garrison grounds should be supplied to all barracks. Near enough for men to attend in clean fatigue dress.

30. More men should be trained as cooks.

31. Schools of gymnasia opened for voluntary attendance practically all the evening on week days.

32. Progressive lectures on hygiene, prevention of diseases, etc., be arranged in all commands.

In conclusion, I would impress on all ranks, officers and men, that it is their duty to their King and country, to keep themselves physically and mentally fit, ready to go on active service at a moment's notice; they are paid by the State to be so fit. I wonder how many employers of labour would keep men who could not do the work they are paid for? Not many, I am sure.

Then again, apart from your duties as soldiers, we have the more important duty of parentage, which is a large and vital one to the State. This duty affects both men and women.

Both sexes should strive to be physically fit for the sake of their children and future generations.

Children born of women distorted by the calls of fashion, such as corsets, and of men weakened and effeminated by the abuses in large towns, drink, etc., and want of physical training in both sexes, cannot possibly be strong and healthy. It is against all laws of nature to expect other than puny mites of babes, who grow up to be weak and unwholesome beings.

Let me put all your duties, as above, to one side and make my last appeal. It is a purely selfish one, but, no doubt, it will prove stronger than all the others.

Have you ever tasted the delights of being in training for an athletic event?—it gives one the glorious feeling of being a king amongst men, strong in body and mind, healthily tired at night, good and refreshing sleep, enjoyment of food, and still greater enjoyment in all work and play, and with an ambition to do and dare almost anything.

Compare it with the man about town, whether clubman or corner boy. Both are tired of life, they have not any enjoyment in work or play, blasé and surfeited with all the pleasures and laziness their walks in life give them, with no prospects in the future, except for the clubman, a growling, fault-finding, premature, old age, caused by complete breakdown in the system; and in the corner boy, the workhouse, river, or some such equally bad ending.

Without a doubt far more men die for want of work or exercise than from overwork, one might safely put the ratio as 100 to 1; and for every man dying from starvation, thousands die from the effects of over-eating and drinking; in fact, if people would only eat and drink rationally, taking proper exercise, half the medical profession might turn their hands to something else instead of patching up people's digestions.

## Table of Food Values.

The following table of food values is issued for guidance in providing food with the men's messing money. The amount of proteid is the main guide as to value of food as nourishment. An ordinary man requires about 4 ounces of proteid daily, if working hard $4\frac{1}{2}$ ounces, and if a growing lad and also working hard 5 ounces. The proteid of food is the muscle forming part of that food. A man's rations of meat and bread contains $2\frac{1}{2}$ ounces of proteid or rather less.

Beef tea, chicken broth, whiskey, beer, wine (all intoxicants in fact), tea, coffee, and cocoa are only stimulants, and do not contain an atom of nourishment. The proteid remains in the beef or chicken, when making beef tea or chicken broth, so do not throw the meat away.

All water, in which peas, beans, lentils, etc., are boiled in, should be kept and used up as stock for soup, as a great part of the peas, beans, etc., will be boiled away in the water.

If you cannot assimilate any food, irrespective of its proteid value, do not continue taking it. By assimilation is meant food that agrees with you—food that you can digest easily.

Values of proteid, starch, etc., are shown in nearest fractional value. These values can be seen in all good cookery books:—

| Food. | Protei (For muscle forming). | Starch, Fat, etc. (For forming fat and heat.) | Chemical Salts. (Necessary for body). | Water. |
|---|---|---|---|---|
| Lean beef ... ... | 1/5 | 1/25 | 1/20 | 7/10 |
| Lean mutton ... | 1/5 | 1/20 | 1/20 | 7/10 |
| Pork ... ... | 1/10 | 1/2 | 1/50 | 2/5 |
| Poultry ... ... | 1/5 | 1/25 | 1/100 | 13/20 |
| Fish ... ... | 1/6 | 1/33 | 1/100 | 4/5 |
| Egg ... ... ... | 1/7 | 1/10 | 1/66 | 4/5 |
| Cornflour ... ... | 1/10 | 7/10 | 1/60 | 1/7 |
| Oatmeal ... ... | nearly 1/6 | nearly 4/5 | 1/50 | 1/20 |
| White bread ... | 1/20 | nearly 1/2 | 1/200 | nearly 1/2 |
| Whole wheat bread | 1/11 | 3/5 | 1/33 | 1/7 |
| Milk ... ... | 1/25 | 1/11 | 1/125 | 17/20 |
| Cheese ... ... | 1/4 full | 1/4 full | 1/25 | 7/20 |
| Butter ... ... | 1/150 | 17/20 | 1/150 | 1/8 |
| Nuts (average, *not* cocoa-nuts) | 1/4 | 3/5 | 1/33 | 1/14 |
| Peas ... ... | nearly 1/4 | nearly 3/5 | 1/37 | 1/9 |
| Peaflour ... ... | 1/4 | nearly 3/5 | 1/33 | 1/9 |
| Beans ... ... | 1/4 | 1/2 | 1/28 | 1/7 |
| Lentils ... ... | 1/4 | 1/2 | 1/33 | 1/8 |
| Cabbage ... ... | 1/50 | 1/40 | 1/90 | 9/10 |
| White turnips ... | 1/60 | 1/400 | 1/160 | 9/10 full |
| Date (dry) ... ... | 1/11 | 3/5 | — | 1,3 |
| Fig (Dry) ... ... | 1/25 | 1/2 | 1/33 | 3/10 |
| Potato ... ... | 1/50 full | 1/5 full | 1/100 | 3/4 |

Lieut.-Colonel C. H. Melville, M.B., R.A.M.C. (Member of Advisory Board):—As the lecturer, in the course of his remarks, asked any medical officers who might be present to speak on the subject, I will venture to say a few words. The question of physical training is a matter which at present is occupying the attention of a War Office Committee, of which I am a member. The Committee consists of three or four medical officers, Colonel Egerton, of the Yorkshire Regiment, and two expert physiologists, and we are going into all the questions connected with training, food, cooking, and clothing, in fact, everything that affects the efficiency of the soldier. During August, Dr. Pembery, of Guy's Hospital, and I made some experiments at Aldershot on the effects of exertion, which I think might interest those present. We found that, as the lecturer says, any exercise raises the temperature. Up to a certain point that rise is natural; the work is done if anything all the better for it, and some of it could not be done without it; and, after a certain point is reached, the temperature rises to such a height as to become harmful and prejudicial. I will not swear to my figures being absolutely accurate, but if the natural temperature is under 102° it is probably physiological, so that certainly 101·5° is physiological, and there is no harm in it. But over 102°, if you train a man with a heavy weight or on a hot day, the effects are prejudicial. I noticed that very markedly on one very hot day in August, when four men marched in full marching order for five miles without a rest. That cannot be called a hard march; any man in good condition and properly kept ought to be able to march five miles without serious results. All their temperatures

were 102·4°, the pulses were 155, they were breathless, soaking with perspiration, and very shaky. When they came in, I took their pulses, temperatures, and so on. The pulse was very rapid, every now and then small and then big, varying in rhythm, force and frequency. We found that the rise in temperature varied with the heat of the day, the amount of clothes worn, the way they were worn, and, to a certain extent, with the load carried, but especially in regard to the way the clothes were worn. The variation is tremendous between a man marching, as he usually does, with his coat buttoned up, and a man marching with his coat open or in his shirt-sleeves. That makes all the difference. We noticed at Aldershot some regiments going out for their route marches in their shirt-sleeves, and other regiments going out in their coats, and I noticed exactly the same thing with the Volunteers on Salisbury Plain, some of the men having their coats thrown open, some being in their shirt-sleeves, while others had their coats buttoned up. Every man who had his coat buttoned up was flushed and looked jaded after a short march, while the men who were in their shirt-sleeves seemed comparatively fit on a hot day. A good deal has been said in the lecture about the object of physical training. It seems to me there are two objects in it. Mr. Rudyard Kipling once wrote a very clever story, called "The ship that found itself." The gist of the story was that no ship or no machine when first made and put into working order, is at its best until all the parts work together and are fitted to each other. It is very much the same with a man. When a man is beginning to work he has to find himself: to make his heart work with his lungs, and his nerves have to work with his muscles; and, therefore, the object of physical training should be to get all the different portions of our system working together, in order that the man may find himself properly. The next object is to fit men to undergo the special exertion which his particular profession calls on him to do; and, thirdly, that as that exertion is extreme, as it must be in all cases occasionally, the man should, as readily as possible, come back to a condition of equilibrium; that is to say, if you press a soldier to such an extent, as you may have to, that his temperature rises to 102·5, so that he gets shaky, and his pulse is rapid and irregular, his training should be such that, as quickly as possible, he should come back again to a steady pulse, normal temperature, and firm muscles. I do not think that our present system of training is conducted in that way. We want the soldier to be a man who can walk, carry a load, run, and do all those things to excess, and yet, at the end of it, be able to shoot. I think that is a fairly right statement of the position, as far as I am able to judge. The lecturer referred to horses. If you want to fit a horse for the hunting field, or for racing, do you put it through gymnastic exercises? You make him do short distances and then longer distances; you put on less weight, and then more weight; in fact, you make him do in training that which you expect him to do in his work. Why should not the soldier's training be his work? That is to say, all the time he is training he should be learning his work at the same time. To train him to march make him march; to train him to run make him run; to train him to shoot make him shoot; but do not put him on the parallel bars. I do not want to say anything nasty about gymnasia, or anything of that kind, but the soldier has not much time to learn his work, and physical training, as far as I can see, goes rather against his learning his work. I would not abolish gymnasia, because I think night gymnasia would be a great thing, and, of course, they are very useful for exercise

in bad weather; but I think the practical ordinary training of the soldier should be walking, running, jumping, boxing, and fencing, in fact, every kind of exercise of the muscles and of the body, which he will eventually have to use in the ordinary course of his profession. The lecturer did not say much about deep-breathing. I saw deep-breathing being done at Aldershot the other day in the gymnasium there, and I must say it struck me as a practically useless exercise. The best training of all for breathing is running. The man who runs well will naturally breathe in the way easiest to himself. If you give him a run of a mile one day, two miles the next day, and three miles the third day, by the time he comes to long-distance running he will have taught himself the best way to breathe. The lecturer referred to the question of smoking, and asked medical officers if they had any remarks to make on that subject. As far as cigarette smoking goes, the cigarette the soldier smokes, there is nothing to be said for it except that it is bad—hopeless; but of smoking in general, I think you will find the opinion of physiologists differs. If a physiologist smokes, he says it is good, and if a physiologist does not smoke he says it is bad. Finally, the lecturer said something about wearing flannel—it is hardly a subject connected with physical training—and, at the same time, he said he would not use cotton. I think he is right so far as the cotton we get in England is concerned, but in India a great many people cannot wear flannel. I have not a tender skin myself, so I do not mind, but I know a great many men, especially soldiers, who get positively ill from wearing the flannel shirts they have to wear. There is a cotton in India which is called cotton twill lining, that is almost as absorbent as light flannel, and I thought I would mention that point, as it is rather interesting. As regards lectures on venereal diseases, they were started in India last year, and I believe they are still going on, but I have not been out there for some time so I am not certain. With regard to lectures on sanitation, there is a school at Aldershot where Colonel Firth gives lectures to non-commissioned officers and men on the subject of sanitation, and I think they have had a very good effect so far, the men taking a great interest in the subject. I believe that lectures are also given at Sandhurst and Woolwich. There is one point that the lecturer did not say much about, namely, the question of drinking—I do not mean alcohol, but drinking in general. Should you drink during exercise or should you not? It is a question that everybody has an opinion about, and I should be very glad if somebody would give me an authoritative opinion on the subject. If you take hard exercise and perspire, you must drink enough to replace the perspiration, that is obvious; but apart from this, should you drink more than you actually need to replace the perspiration? When I was shooting up in Cashmere my shikari had a drink at every spring we came to, even if it was only half-a-mile from the last. I asked him why he did it. He said: "Sahib, I always drink; the more you drink the better you'll be. It is very nice water." I did the same as him, and I never suffered any harm. I used to drink water every time I came to a spring. But opinions differ. I remember that Major Bruce, of the 5th Gurkhas, told me he never drank, and he is a great hill climber; but he said that the Gurkhas drink copiously. I should like the lecturer to tell us whether, in his opinion, apart from the question of alcohol, a man should drink when he is working, or should he not? Horses you do water fairly freely. In London the omnibus companies, during the hot weather, supply water to their horses at various places in London. In the hot

weather we constantly see pails of water with oatmeal in them, at the places where the 'buses stop, and the men allow the horses to drink freely during their work.

Mr. R. N. Grenfell :—The lecturer has dealt almost entirely with the technical side of this question. I had hoped that, with his great knowledge, he would have made suggestions for improving the condition of the would-be recruit. Nor does he classify the difference between physical exercise for the richer, and physical exercise for the poorer classes. Probably he passed over the more affluent as being too small a section to bring into this very important discussion. Among the leisured classes physical exercise is much overdone. There are a great number of so-called educated people, who imagine that they should hunt, or play golf, or take hard exercise every single day, and that if they have not had that exercise, their day has been wasted. That appears to me to be ridiculous. If those people were to give half, or even a quarter, of the time that they give to the strengthening of the muscles of their body, to developing and cultivating their minds, not only would they be the better for it, but they would not get so bored and always be chasing after new "wild cat" schemes, and we should also probably find the debates in the Houses of Parliament much more interesting than they are at the present time! We have been given the reasons for the general physical degeneracy of the people. Surely it is a most serious matter for the future welfare of this country, and one well worthy of the consideration of all educated people. I have often thought it would be well if some Act could be passed empowering the London County Council to build gymnasia in the more congested districts in the East End of London, and in all the large towns, and that children should be obliged to attend those gymnasia for at least three hours every week under some competent instructor. You have but to drive from this building to Euston, and you will pass some small London schools. Possibly, if you went during the hours of recreation, you would see quantities of children playing about in the gutter or in the playgrounds. How much better it would be for the whole community, for the whole country, and also for the children, if, during those hours, they could be got hold of and given some light physical training, or some light exercise; not that play in good playgrounds does the children any harm, for it is one of the best things for developing their independence. There is another class, such as City clerks and shop boys, who spend the majority of their time indoors, without any chance of physical exercise. In the evening, during half the year, when their work is done, it is too dark for them to do anything. To the majority of these people sport is quite impossible. There are not sufficient recreation grounds for them all to play football and cricket, while hunting and other country sports are quite out of the question. What can they do? They can but fall back on gymnasia and military exercises, which can be carried on not only in the evenings but on Saturday afternoons, when they get away from business. I happen to be employed in the City, and so am brought into very close touch with some of these clerks; and it is with the utmost regret that one witnesses nowadays the mad craze with which, on Saturday afternoons, they all herd out to places like Fulham or the Crystal Palace, to watch paid professional football players or cricket players play the whole afternoon. There was a match at the Crystal Palace last winter at which twenty-two people got magnificent exercise, but one hundred thousand people paid very high sums to go

down that afternoon and stand around on a wet, damp ground, to see them play. Can it be surprising that afterwards a great number of them found their way to the public houses to get something to warm them, or can it be surprising that those who did not go to the public house probably got a very bad "go" of influenza? At Fulham £1,600 was taken at one match in gate money. Cannot some means be devised for employing this waste of time and money for some better purpose, both for the men themselves and for the country? It is with the greatest gratitude that I have heard this most interesting lecture. Would that it, or lectures like it, could be given in the congested districts of this country, or in the working men's clubs, and boys' clubs even, especially those parts relating to food, drink, cleanliness, cookery, and the looking after of the feet. The great ignorance that even our decent poor have with regard to questions of hygiene, is perfectly amazing; and, as the lecturer says, it would be far better on the rare occasions when lectures on these subjects are given, if plain English only was used, instead of long "terminological inexactitudes."

Mr. Eustace Miles:—I wish to urge, among this gathering of influential and authoritative people, that there should be more experimentation on this subject. At the present time we are merely at the beginning of knowledge on the subject of exercise. Ideas, which we took for granted many years ago, are now proved to be, not altogether wrong, but not nearly so certain as was supposed. I want to urge the adoption of a spirit more like the American spirit—not the American Trust system, or anything of that kind—but the system that prevails in American Universities and Colleges. There you will find that they get hold of a subject of interest and thresh it out; for example: How much food is required by the average man daily? How much exercise is required of him? What is the effect of exercise when it is enjoyed and when it is not? What is the effect of exercise when it is taught for one hand only while the other hand rests, and exercise when it is taught for the two hands together? I could go on for an hour telling you of the different problems they tackle. They do not simply tackle them on paper, but they set squads of their men to experiment on them and register the results, just as one of the speakers in this discussion described the taking of the results of a march of five miles. That is what we need. We need far less talk and far more statistics. It is experimentation that convinces people. I am not going to lay down any law, because I know practically nothing on the subject (I am just beginning to find out how remarkably little I do know), only I should like to point out just a few experiments that might lead to something in the end. The first is with regard to diet. I have obtained certain facts in regard to that. I am convinced that there is no best diet for everybody, because experience proves that no food has been found which does suit everybody, but my own little experience shows that there is a possibility which we have scarcely dreamed of. I have been for three months without exercise, that is to say, without any exercise beyond that of dressing and walking a few yards. During that time I dieted myself, and at the end of the time I was in perfect condition. A fair test of condition is this: to run a mile, to go for a walk, to run another mile, after that a little work, then a single at rackets for an hour, another run, and then two hours single at tennis, and feel fit at the end of it. That is a comparatively good test. People say that you must have regular exercise daily if you want to keep in training,

but I was able to do without training for all that. I do not say it applies to many other people as well, but the mere fact that one person has done it is enough to make it worth while to experiment to find out whether all this vast amount of exercise, which is demanded and which taxes our time, our money, and our energy, is really necessary; whether there is not another and a better way. The conditions that we, as a nation, have to tackle are not the Army conditions at all. The people who have been mentioned are the clerk, the factory girl, the office boy, and others, who cannot get two or three hours' exercise a day. We have to find out how we can keep them fit without these sports, and so on, being necessary. I believe the solution is within your hands. If you make experiments, as they are made in America, on the most scientific grounds possible, you will find that the methods which we are adopting now throughout our country are absolutely rotten. There is no science in them at all. If you take the men and keep them out of their exercise for two or three days, or two or three months, what is their state at the end of it? They are fit for nothing. That should not be so. We cannot demand of the clerk that he shall have as much exercise as is demanded of the soldier, for instance; because he cannot get time for it. That is only just one instance. I could mention, without any difficulty, a hundred instances of things which we now take for granted, but which are absolutely unproved. The great majority of the audience I am addressing consists of people of importance, men in authority, who can say to a man: "Do this," and he doth it; and to another man: "Go," and he goeth. I wish you could get people to take up that experimental spirit which is making America such an extraordinarily successful country—success undesirable in many ways, but in other ways magnificent. There are some problems which, the more you think of them the more you are struck with their importance. For instance, the problem of washing, which has been mentioned this afternoon. It is very nice to say that baths and shower baths are good, but you want to teach people how to wash if they only have a cupful of water at their disposal. It is quite simple when you have worked it out; but these are the things to be worked out and taught to the masses, and there is no one like yourselves who can teach them. Then, take the question of sport. You say that the majority of rich people in England get their sport quite easily, and that the majority of people do not get any at all, and cannot get any because there are not sufficient playgrounds. I would ask those who are interested in the subject—and I suppose that is the whole audience—to take the opportunity of going into Eltringham Street, Wandsworth, where Mr. Corsie has one of the County Council schools. You will find there that every child among the 500 or 600 children in the school is able to play every game. Mr. Corsie says: "We have a little bit of a playground"; he does not say: "Where is our big field? We will not play till we get it." He says: "Here is a little playground, and we are going to use it." How does he manage with 500 or 600 children to see that they get their recreation and physical exercises? He divides them into squads. He takes them out during their hour's lesson, say 15 at a time, puts them into the court, and teaches them to play football and cricket. Every boy in the school is able to play every game. I should like to give you many similar instances. It is not that they are valuable as instances; they are valuable simply for the spirit they show, the spirit of experimentation. Nowadays, when an experiment has been made, we have conditions which we never had before for making the results public.

The week after it has been made, and after all the statistics have been drawn out, the result can be in every paper and be read by millions and millions. That is our great blessing to-day. You may curse the cities as much as you like and long for the country, but when such people as yourselves, who have the interests of the nation at heart, set to work and experiment along the sanest lines, there is this great blessing of civilisation before you, that in a few days you can let the whole nation, and in a few weeks the whole civilised earth, know what you have found out. I would just urge you once again to take up the question from an experimental point of view. You may think that this, or the other, idea is a fad, or crankiness, or any name you like to call it, but take it for granted there is a great deal in most fads. All you have to do is to extract the part that is good, throw away the husk, and give the kernel to the people to digest at their leisure. You may arrive at the conclusion that the fad is practically worthless. That is a conclusion that is worth arriving at. The wrong thing to do is to stick in the old ruts, and go on doing things exactly in the same way as they were done 100 years ago. That is not a good thing for us to do. We have to live in cities and keep fit in cities; we have to experiment how to live in cities. We have to settle things that are suitable for 99 people out of 100; and we shall only get that by experimentation.

Mr. Stanley Thomson:—I hardly agree with the last speaker, that any experimentation is required on this question. The subject has been before the people in this country for a very considerable time, and one ought to be grateful to Captain Cantan for the exceedingly interesting way in which he has treated it, as he has been more than usually scientific and practical in doing so. I understand, however, that he has not prepared his paper in the interest of school children, but with the object of suggesting the most scientific way of encouraging physical education amongst young men who are needed for the State, not merely as soldiers, but as capable citizens, and I am exceedingly grateful to him for having referred to the citizen point of view. One need not be a soldier to understand that physical training is more under control and more easily managed with soldiers than it can be with civilians; but it does not follow that the civilian has not facilities too, and that he ought not, from national motives, to take more advantage of them than he does. In my early days I took a keen interest in athletics. For a time I was Secretary of the Thames Rowing Club; I was Secretary also of a committee composed of the captains and secretaries of all the leading amateur rowing clubs on the Thames, and the object of the committee was to encourage physical education in that particular direction. We had a procession of boats at the beginning of every season, and we started an annual regatta, and our aim was to attract public attention to rowing as the best all-round form of physical training. During the winter months, of course, club rowing was not practicable, but the German gymnasium afforded pleasurable occupation, and a number of our club members joined it for the boxing, bar, club, and vaulting exercises; fully believing that we were not only developing suppleness and muscular strength, but that we were certainly improving our stamina. I am going back now to 35 years ago. The German gymnasium had then been recently introduced into London, under the enthusiastic leadership of Mr. E. G. Ravenstein. It was arranged on a scientific basis, and had, in a very short time, attracted a great deal of attention. I notice this because popular physical training for civilians had previously been quite unknown in

London. No doubt there were so-called schools of arms, where fencing was the peculiar attraction; but general gymnastics were not conducted there on the systematic basis of the German system, and they very soon died a natural death, giving place to more scientifically arranged gymnasia, such as we now see in connection with the various polytechnics in London. With all our experience of the German system, however, we have not yet caught the spirit which makes for popularity. The Polytechnic Gymnasia are in the charge of paid military sergeant-instructors, who do their work splendidly and are very popular; nevertheless, it would seem to be their impression that they have merely to do with those who happen to come to the class, and that it is no business of theirs to use the best means of encouraging that regular and long-continued attendance which alone can turn out large numbers of fair gymnasts with good, manly physical development. I would specially commend this to Captain Cantan's attention. Now, the German system, as I found it, was one of practical progression as a means of encouraging an interest in gymnastics. One fault that I find with military gymnastic instructors in civilian training is, that when they are taking the young recruits in the Polytechnic Gymnasia they do not select them for class work according to their physical qualifications. The German system is to utilise the first part of the hour's training, on two nights a week, for free exercises in mass. The members are drawn up in squads along the hall. The leading men, the first rank, are the unpaid leaders who have worked their way up to that honourable position by long experience in the gymnasium. In the next rank are the sub-leaders; the next rank is composed of members who have had less experience, and so on in the ranks till you get back to the awkward squad in the last row. At the close of the mass exercises each class is drafted off to work on apparatus, which is suitable to their capabilities. The sergeant-instructors, however, judging by the actual experience of young members that I have known, arrange differently. Height and physique, rather than experience in gymnastics, regulates selection for the squads, so that when told off for class work, there is a mixture of the highly experienced and the totally inexperienced set to work on bar or rack exercises, for which novices are quite unfitted and needlessly risk rupture or other injury. Surely the *progressive* training, and the impetus to ambition fostered by graduating the squads according to experience and ability, is the better system. Then, too, there is a want of discretion in not dividing the evening's work, so that the whole time is not taken up by all arm and shoulder work or all leg work, as I have seen it; half-time for the one, and half for the other is surely more effective for the civilian element. In making this comparison, however, I am merely influenced by the desire to suggest the secret of success which secures civilian interest, and keeps young fellows in regular attendance, progressively learning something, and season after season finding new experience, which makes them more athletic, and the gymnasium more popular than it is.

Mr. J. Pope:—As a "man in the street," I would like to ask whether you do not think that the important aims you have in view, namely, physical fitness in the soldier, could not be obtained by employing him much more than is done at present in some useful outdoor occupation, for instance, some kind of agricultural occupation? Do you not think that might be a possible solution of the difficulty of finding employment for discharged soldiers? It seems to me that these men would be much more likely to be interested in their exercises when they found them not only useful, but also practical and remunerative.

Surgeon-General G. J. H. Evatt, C.B., M.D.: — The lecturer, in the course of his most interesting lecture, referred to gymnasia being opened at nights. The War Office at the present moment allow gymnasia to be kept open till 10 o'clock at night in every barracks in England and in the Colonies, and I suppose the same rule applies in India. I should also like to say that at Mill Hill, in the new barracks, which I visited last week, the gymnasium, instead of being built on to the Institute as it should have been, has been put away in a corner of the barracks where nobody would ever think of visiting it on a wet winter night. I think every officer will agree with me that the gymnasium should be built on to the Institute. The Institute is our future hope, where all the military arts and sciences will develop; and to keep the gymnasium separate from it, and put it away in the corner, and keep it dark at night, is a very great injury to the well-being of the soldier.

Major-General Sir John Moody (late R.M.L.I.):—First of all I should like to congratulate the lecturer on the interesting lecture he has given us. I have looked forward to hearing this lecture, because I read a somewhat similar one which Captain Cantan gave in Dublin. It is very pleasant indeed to see an officer so thoroughly in earnest—one who has some gift, as our Chairman, of being able to enthuse everybody that he comes in contact with. The object Captain Cantan has in view is to physically develop and so build up both our young men and young women. It is very important that we should do all we can for the young service men during the time we have them under our control. Unfortunately we have great drawbacks to contend with. Youths come into the service at a very much younger age than they make a solemn declaration that they are. I hope that some day or other all recruits will be compelled to produce a birth certificate when they enter the Army, in the same way that is obligatory when youths are employed by large employers of labour. However, that is beside the question. With regard to the rations, they have been very much improved. At the Recruit Depôt, Royal Marines, at Walmer, the recruits receive a considerably increased ration when they start in the service than when they become trained soldiers, a wise and economical measure, which should be followed throughout the Army. Immature youths rapidly become able-bodied men. The lecturer has made reference to the evil of drinking tea, but I do not think he laid any emphasis on the value of cocoa. I daresay many here have had naval cocoa when in the old troop-ships, and appreciated its value; it is manufactured by the Navy, and has a great deal of fat in it. I can say from experience it is one of the finest foods you can possibly have, for it is really a food. When I was in command of a marine division I was allowed to purchase naval cocoa, or rather chocolate, from naval stores, so as to give my men a ration before they went to early drill. The effect on the men was something wonderful; it was a stay to the stomach, before they began work in the early morning, and I cannot speak too highly of the good effect it had, especially on the young men. There is so much in the lecture for thought that it is almost a pity we cannot have an adjourned discussion, so that the matter can be thoroughly threshed out. The time is so short, and many of the audience must catch trains; but I am sure, when the members read the lecture in the Journal they will find that it contains much food for thought. The lecturer has dealt with the question of games and amusements in barracks. As Vice-Chairman of the

National Association for the Employment of Reserved and Discharged Soldiers, I do wish that the men could be induced to devote some of their leisure time to technical instruction, something on the lines that has been followed so successfully at Eastney Barracks. I have had the pleasure of going down to Eastney several times, and I have particularly noticed how keen the men are on the technical instruction. What they learn stands them in good stead when they leave the service. Many Army men leave the service, particularly the infantry, and go out to face civil competition absolutely unskilled. It is found to be most difficult to fit unskilled men into situations that are remunerative. I am certain that, at large garrisons like Aldershot, if the men in their leisure time could be induced to take up technical education, it would be to their advantage, both while in and out of the Service. Do not try and nurse the men; get the young officers to take an interest in the subject, and you will find they will have a much greater influence over the men than the older officers. They will show the men how to help themselves. With regard to the question of halls and gymnasia, I wish to goodness some people, who make presents of libraries all over the country, would make us a present of drill halls. They are very much wanted everywhere. I have had a great deal to do with the Boys' Brigade. Drill halls are our great want. In the Boys' Brigade we have 60,000 boys, whom we are training on lines that have been referred to in the lecture, and this with the very greatest benefit to the boys and youths. Our Chairman takes the greatest interest in the work; he has taken the chair for us at one of the annual displays at the Albert Hall, where we had some 3,000 boys; he imparted to the boys the same enthusiasm which he imparts to everybody that comes in contact with him. In conclusion I should like to say that I am, personally, extremely grateful to the lecturer for coming over from Dublin and giving us this excellent lecture.

Captain H. T. CANTAN, in reply, said:—Colonel Melville referred to the clothing he saw being worn at Aldershot. Does not Colonel Melville think that if all ranks were taught hygiene and physical training, we should not have the spectacle of some troops wearing jackets in hot weather when going out for marches, and other troops clothed rationally by not wearing jackets? If officers only realised the advantages of understanding physical training and hygiene, I am sure things would be very much improved. With regard to the question of drinking, I think we want to train our men not to drink, for the simple reason that we are training our men for one object, viz., active service. When soldiers are on active service, the great bugbear is the drink question. In South Africa the men used to drink out of every pond they came across, unfiltered water, with the inevitable consequence that they caught fever. I think we should train men to drink as little as possible; that being the object we ought to have in view. Most men, when training for any event, reduce their drink to become fitter. With regard to the question of training men on what they are going to do in the future, Colonel Melville spoke about the horses being trained in running only. You have to remember, on the other hand, that a man has to do several things. For instance, he has to carry accoutrements, rifle, clothing, and to climb sometimes; so that if we can develop the body as well as the legs by light work—I am not a believer in heavy work—we shall have a finer man for active service. To put the man's training on the same footing as a horse's is not fair to the man, because the horse, prior to his training, has such a big pull over the man. The horse, up to the

time of its breaking-in, lives a natural life on the grass, with plenty of natural and wholesome food and exercise. It must develop and grow big in the bone, it cannot help it; but with man, say our recruit, how is he brought up, up to the time we get him? He has, generally speaking, lived an unnatural life in some large town, eating unwholesome or insufficient food, and taking little or no exercise, the result being that he is small and undeveloped in every way. I think a man in this state requires more training than what running, walking, and jumping give. A little light physical culture work, with the walking, jumping, and running, would be more beneficial. We could not give a recruit boxing or fencing as a physical exercise. There are too many of them to be trained. Not only that, but if we are to believe Colonel Melville, "the soldier has not much time to learn his work when doing the present physical training." He would require more time with boxing and fencing. Colonel Melville also says: "Clothing is hardly a subject connected with physical training." I regret to have to differ, as undoubtedly proper clothing is a large item in one's physical fitness or health. With regard to Mr. Grenfell's remarks about classifying recruits, I did not classify them because the majority of those who come to us are undoubtedly of the weaker sort. I am speaking now, more or less, of the infantry class, and they are very poor. I have seen a very large number of recruits as superintendent of gymnasia for seven years, and in writing this lecture I had more in mind the average class of recruit that we have to deal with than the leisured classes in the towns. With regard to Mr. Eustace Miles' remarks on experimentation, I should like to say that I experimented on myself last year. For five months I went without meat. I did not become a vegetarian, but I went without meat and alcoholic drink, and I assure you that I found myself as fit as usual. I was able to play football, and do my work in quite as good form as when I was living on an ordinary diet. Undoubtedly, too much meat is eaten as a general rule. Mr. Eustace Miles also spoke about the youngsters of the poorer classes being trained in schools. That is what we really want, especially for the Army. If we can get the school children trained in games, and in any physical culture, it naturally means that they will be better in physique, and it would lessen the work which would have to be done on them when they join the regiment, for the simple reason that it would be possible for them to carry on the same class of training which they had been taught in the schools. General Moody referred to the question of drinking cocoa. I may be wrong, but I think cocoa contains only fat and no other nourishment, and fat is only useful for heating purposes. Mr. Stanley Thomson points out a great fault in military instructors by not selecting men for class work according to their physical qualifications, and by not making the work progressive. If the military authorities were to carry out Mr. Pope's suggestion, what would the Trades Unions say? It undoubtedly would benefit the men physically, make them better citizens, and fit them for employment when discharged from the Colours.

The CHAIRMAN (Major-General R. S. S. Baden-Powell, C.B.):—I have a note here from the Director of the Army Medical Service, saying he regrets very much that he is unable to be present this afternoon, because he takes special interest in this subject, in both the physical development and the hygiene of the soldier. He told me that Colonel Melville would be here to tell us what was being done in the Army, and this he has already done. I think Dr. Maguire would bear me out in saying that

we English do not half study history. If we did, we should not have required so much information from our lecturer this evening, because Aristotle began this subject some years ago. Aristotle said:—"In the earliest period of training, have more care for the health of the body than for the mind, and for the moral character rather than the intellectual." If this teaching is required in the sunny, open South, Mediterranean country, how much more is it required in the slums of those enormous manufacturing cities of the dirty, cold, dreary North? The worst of the question is that it has not been, up to quite lately, a matter in which any particular authority in the country has interested itself. Colonel Fox is taking it up now as far as possible, under the Board of Education, and that is a very good move. Last week I had to go to open a memorial in a manufacturing city in the North. As I drove through the crowded streets of the city, sitting alongside the Mayor in his robes, with the people cheering all around us, I remarked to him:—"There are a great many people here, but very few teeth." He said:—"Yes, that is so; but there are not so many people as there ought to be either, because in a neighbouring town the birth-rate has beaten ours this year. It has gone up tremendously; the mayor has made it go up by seventy-five per cent. He said he would give a sovereign to every woman who could produce a one-year old child at the end of his year of office." The death rate amongst the children went down at once three-quarters, which shows that it only wants some encouragement to bring up this generation that is dying by being "over-laid," as they call it in the coroner's court. Vegetius, in "De re Militari," gave the full reasons for the decline and fall of the Roman Empire, which he put down to the deterioration of the men of the country, to the poor recruits that they got into the Army, and to the luxury of the upper classes in giving all their times to games and nothing else. Those are lessons which, if we read history, we ought to take to heart and see they do not occur to us. Our Army is a very small one, and, therefore, it needs every man to be specially well-developed. It also needs a backing in the nation of further well-developed men, able-bodied, and stout-hearted; and even then our country will only be saved if the soldiers have the proper spirit in their able bodies—that is *the desire to kill or to be killed*, and the civilians have the desire to back them up, *to do their duty, and to sacrifice themselves* when it is necessary in the defence of their homes. The way to obtain this able-bodied nation is to get physical training more universally developed. A German authority was deploring only the other day the fact that if universal peace came about, it would stop Conscription; it would, therefore, stop universal training, discipline, and physical development throughout their country, and thus be a disaster to the nation. Captain Cantan has given us a most excellent lecture this evening, in indicating the means for making inefficient recruits into good and serviceable men by physical training and hygiene. Every case ought to be treated on its individual needs, and every combatant officer, therefore, ought to know all the points that have been brought before us this evening. He ought to know how to deal with the case of each man under him, both in regard to physical training and hygiene; the aim being to make a real good, tough, fighting man; the means being physical training, which includes discipline of the mind over muscles, strengthening the organs and blood for endurance, and developing the required muscles for fighting; and besides that, a knowledge of hygiene to preserve the health. *It is as much the officer's duty to have his men fit and strong as it is to make them good shots and good riders*, and that ought to be brought home to

every officer. Then there is a second duty falling upon the officer, namely, to build up the character of his men in intelligence, in discipline, in a sense of duty and patriotism. In carrying out these two duties every officer has a great power in his hands of doing a good national work by preparing these men to be good soldiers, and thus building them up to be good citizens, and fathers of good sound men in the future. I think I shall only be voicing your feelings if I say that Captain Cantan deserves our very heartiest thanks for coming here and giving us this excellent lecture; and I also think he deserves the thanks of the whole Service in the country. He has brought forward a great subject in a very concise manner, and very clearly. I hope this lecture will go far beyond the walls of this theatre, into the camps and barracks all over the country. I really think it ought to be printed in a separate pamphlet apart from the JOURNAL, so that it could be sent to schools and other places, where it would be of infinite value, especially when the remarks which have been made to-day are added to it. The gentlemen who have taken part in the discussion have put forward some very practical and serious points, which ought to receive far wider consideration than we can give them merely within these walls. I ask you to accord a very hearty vote of thanks to Captain Cantan for his valuable lecture this evening.

# COMBINED STRATEGY FOR FLEETS AND ARMIES; OR "AMPHIBIOUS STRATEGY."

*By Colonel G. G. ASTON, C.B., R.M.A.*

---

On Monday, 15th July, 1907.

Admiral of the Fleet Sir A. K. WILSON, V.C., G.C.B., G.C.V.O., in the Chair.

---

The CHAIRMAN (Admiral of the Fleet, Sir A. K. Wilson):—I imagine that Colonel Aston, who is to read to us a paper on "Combined Strategy for Fleets and Armies," will be well known to practically everybody here. I think I may say there are few officers who have had more opportunities of intimate knowledge of the strategical requirements of the two Services. His services at the Admiralty in the Intelligence Department and in the flag-ships of the Mediterranean and Channel Fleets must have given him a very good insight into the strategical requirements of the Navy. He served in the Army in South Africa, and for the last three years he has been in the Staff College at Camberley, where, to my personal knowledge, he has used his influence to a very great extent to bring military officers in contact with naval matters.

---

## LECTURE.

### INTRODUCTION.

WHEN I originally undertook to read a paper on "Amphibious Strategy," I had no idea of the tremendous breadth of the question and of the issues involved. One can dogmatise upon almost any subject, unless one has happened to have studied it, and it would be a comparatively simple matter to evolve amphibious principles of a plausible nature, but quite impossible to apply such principles, lightly laid down, to any individual case of war in the world as we find it. Special conditions apply to every war that one can imagine. It is almost impossible to generalise, and in the time at our disposal I can only hope to put before you a few suggestions which may serve as a basis for profitable discussion.

We have some of us spent the best years of our lives in the study of the strategy of land forces, and this in itself we have found full of complications, though of absorbing interest. We must, however, recollect that simple land strategy can be applied only in a conflict between Continental countries and their immediate neighbours. As these neighbours are few, and can be got at over land frontiers, the study of such strategy resolves itself into investigating how best to employ a field army to defeat that of one, or possibly two, hostile countries.

Our own case is different. On account of the geographical distribution of the territory and population under our flag, we may have to fight both on sea and land for our existence as an Empire. Strategy for us must necessarily embrace the conduct of operations on both elements, and practically all the civilised countries in the world, except Switzerland, are the immediate neighbours of the British Empire in this sense. There are numerous individual cases to consider, and the problems in each case differ like the patterns of a kaleidoscope. If we want to avoid confusing the issues at stake it would be well to try and get at bedrock principles, and to consider first the real objects to be attained in all war.

Wars between nations seem very much like fights between individuals. Each tries to get at the vitals of the other, while guarding his own interior economy from serious disturbance by the enemy's weapons. In considering war, therefore, the first business is to locate these vitals. This involves the study of economics, and although this perhaps is the special business of the statesman rather than of the seaman or soldier, yet there is one recent development with which every student of amphibious strategy should be familiar.

I refer to the fact that in most countries conditions have altered very much of recent years owing to the greater density of populations and to other causes, and industries have become more important than agriculture as a means of livelihood for the people. Agricultural and pastoral countries are almost self-contained. Food, clothing, and shelter can be provided for the population without the need of communicating with other territority, except for luxuries. Industrial countries, on the other hand, depend upon external communications; food and raw material must be imported, and a proportion of the manufactures must be exported. Where this is the case external communications must be looked upon as part of the vitals, and a blow which strikes at these strikes also at the population, and tends to reduce or even to paralyse its resisting power.

It is now generally accepted as a fact that the population of the United Kingdom cannot carry on a war unless free communication by sea is ensured; but it is hard to actually prove the fact, because we have so little information to go upon. For instance, we do know what manufactured articles we export and their value, but we do not know how much we make for the home market. Complete knowledge of the *proportion* of manufactures exported is one of the points to be ascertained before estimating the extent to which the interruption of sea communication would hit the different industries, and so affect the purchasing power of the population. The present Government have announced their intention of taking steps to complete this information, and a few years hence we may be in a better position accurately to locate our own vitals. Meanwhile we cannot do better than accept the opinion of the recent "Food Commission," that if our Navy was no longer able to prevent an organised attack on our sea communications, "there might be produced such suffering that the country could hold out no longer."

The Commission I refer to reported upon the question of food and raw material. They were not asked to consider exported manufactures, nor the effect which the loss of sea communication would have upon finance, and upon our power of raising loans to carry on the war. Nor were they invited to go into the question of the possible loss of our important carrying trade as an industry.

The financial aspect of the problem also requires most earnest study. Modern wars are costly, and tend to become severe tests of financial endurance. They must be paid for partly out of capital, partly out of revenue, and both methods will be affected in our case by the naval situation. Our power of raising war loans will depend to a great extent upon successes at sea, and our power of imposing extra taxes will depend upon prosperity, which cannot be maintained without safe communication by sea.

But the time at our disposal does not permit us to follow up this fascinating subject. Fascinating to us because the whole of our amphibious strategy must be so deeply affected by it. We may, I think, accept the statement that we cannot do without the external communications of the United Kingdom, and we all know the importance of sea communication to the Empire at large.

So much for our own vitals. We know comparatively little about them, and even less about those of our possible enemies; but the study is an important one, if we accept the principle that the ultimate object in war is to break down the resisting power of the hostile nation. If we had accurate *data* to go upon, we should find undoubtedly that external communications are becoming of increasing importance to Continental Powers, and to this we must attribute their efforts to build up strong Navies.[1] Only do not let us allow ourselves to be led into the fallacy of arguing about fleets being in proportion to tonnage of the Mercantile Marine, or to sea-borne trade. If such trade, however small, is essential to the life of a nation, then nothing short of a fleet at least equal in available strength to that of the enemy can suffice in war, unless the enemy is a neighbour who can be struck by the field army.

Let us go back to the simile between nations and individuals and consider how they fight to win. Both study their own interior economy to find out where their vitals are and how to protect them. Both ought to study their enemy's vitals and consider how to strike at them.

It may perhaps be interesting to consider three principal methods of striking which can be applied in wars between nations:—

*a.* Invasion of home territory.

Examples—1866, 1870-1, etc.

*b.* Cutting off external communication and seizing outlying territory.

*c.* Forcing a combat in a country not the home territory of either belligerent, and possibly not even belonging to either.

Examples—Cuba, 1898; Manchuria, 1904.

*a. Invasion of Home Territory.*—The most direct way of bringing a war to a successful conclusion is rapidly to invade the enemy's home territory, defeat his main field army, seize the centre of organisation and government, and destroy all means of resistance.

As regards the comparative cheapness of this method at the time, Sir Robert Giffen calculates that the Germans in 1870-1 made an

[1] In connection with this subject, it is necessary to remember that in the case of Continental countries some trade, at present sea-borne, could follow alternative land routes in war, but the extra cost involved by the change of route is an important item to consider.

actual nett *profit* out of the war, represented by a capital sum of £174,000,000, while the corresponding French loss may, in his opinion, be put down at £603,000,000. I am not prepared to say how far this estimate has been generally accepted. We all understand the effectiveness of this method of ending a war, and we shall probably all agree that under present conditions it can only be applied by Continental countries and only against their immediate neighbours. Land invasion of home territory may of course be accompanied by action taken at sea by one or both sides, and may be supplemented by landings on the coast; but as a special branch of study for our own case, we had better turn to the amphibious problems presented by the second and third methods of bringing a war to a close.

*b. Interference with External Communications* (which involves the isolation of any outlying territory that cannot be reinforced, and possibly its occupation by military expeditions.)

The effectiveness of this second method of conducting a war is increasing. It depends upon the extent to which the hostile population relies upon industries and external communications for its support; but we must realise that the method operates slowly, and may become a severe test of financial stability and of the endurance of popular sentiment.

*c. Fighting in a Country not the Home Territory of Either Belligerent.*—Conditions making for war of this nature are specially likely to occur in cases where the oversea possessions of one belligerent, or oversea territory in which he has overwhelming interests at stake, "march" with hostile territory in direct land communication with the home country of the other belligerent. Example—Manchuria, 1904, etc.

The factors to be studied are:—

1. The attitude of the population of the country in which the operations take place, and their military spirit and resources.
2. The relative strength on land and sea of the two belligerents.
3. The proportion of the land strength that can be developed in the theatre of operations.

In all the examples referred to this will depend, in the case of one or both belligerents, upon safe communication by sea, and also upon the means of communication, railways, animal transport, etc., that can be employed to maintain the armies in the field, bearing in mind the local resources of the theatre of operations. It will also depend upon the military strength that must be deducted for employment in other directions. From our point of view, the problem is an amphibious one, as the Japanese problem was in 1894 and again in 1904.

The term "limited war" has been applied to wars considered under the last two headings, but this seems rather misleading. Whichever method may be adopted we must realise that if necessary "the entire moral and material forces of the nation" may have to be devoted to breaking down the resistance of the enemy. A country setting out upon a "limited war" would have little chance against an enemy embarking upon an "unlimited" war against her. The expression "war with a limited object," used by Clausewitz, gives the idea better; although the object may be limited, it may require all the resources of the country for its attainment.

History gives us several examples of wars being concluded without home territory being invaded. The recent war in the Far East was a case in point. Its conclusion was probably due to financial exhaustion on one or both sides, as the other "vitals" of the combatants had not been seriously affected; but it is noticeable that the Japanese did obtain their original "limited" object.

Before passing to the study of the employment of fleets and armies in amphibious strategy, it will be well to summarise the points we have so far considered, and the conclusions arrived at:—

1. That for one nation to conquer another and force the war to a conclusion it is advisable to locate and aim at the vitals.
2. That the simplest, quickest, and cheapest way of doing this is by rapid invasion of home territory, defeat of the field army, and seizure of all resources for organising another one.
3. That industrial countries are becoming increasingly dependent upon free communication with other countries and oversea markets. Interference with such communications may in time induce a Continental nation to conclude a war, but we have little evidence to go upon. (In the special case of the United Kingdom, serious interference with sea communication might bring the war to almost as speedy a conclusion as successful invasion.)
4. Interference with the external communications of a hostile country has the effect of isolating her oversea possessions from her, should she have any.
5. Financial endurance is an important factor in success, and must be looked upon as vital.
6. Wars in which neither side can employ the invasion method to obtain a conclusion are likely to last a long time, and the endurance of popular sentiment and staying power are essential to success.

Having so far cleared the ground, we can now consider the broad aspects of strategy applied to fleets and to field armies in order to attain success in war, and more especially their combined action in what we may call "amphibious strategy."

We have seen that what we want to get at is the enemy's vitals as the surest means of bringing the war to an end. This may be a slow process or a quick one, according to the relative strength of the fleets and armies employed, and according to the vulnerability of the vitals referred to.

Where the belligerent countries are divided by sea, and both sides have Navies, the war must commence by a struggle for the so-called "command of the sea." The importance of this in itself as a means of bringing the war to an end depends upon the extent to which the populations depend upon sea communication for their existence and employment.

In using the term "command of the sea" I should like to use it with the greatest caution. It is a vague term, freely used, and seldom understood. Absolute "command of the sea" would presumably imply that all the vessels of one belligerent could pass freely across it in any direction, and none of the other belligerent. This is a condition very rarely attained. It is not a question of preventing

all vessels crossing, but of the proportion that will be caught. With an adverse "command of the sea" such a large proportion will probably be caught that it will not be worth while to attempt to run ships under the national flag, and vessels belonging to the Power in possession of such command will enjoy corresponding immunity from capture. This applies to merchant-ships and to transports as well as war vessels.

The introduction of torpedo craft has added additional complication to the problem, especially for transports. It may be quite possible for merchant-ships to pass freely in blue water and to follow ocean routes to neutral or friendly destinations, but the destination of a military expedition may be hostile territory containing harbours from which destroyers, torpedo-boats, and submarines could operate. Measures must be taken to dominate such craft, or the expedition will never land.

The late Admiral Sir Geoffrey Hornby considered that he could say he had "command of the sea" when he could report to the Admiralty that it would be safe for military expeditions to cross it, and at an earlier date a similar definition was put forward by Sir George Clarke. This is the aspect of sea command that we want specially to consider in studying "Amphibious Strategy," and let us remember that the principle cuts both ways, and that if the expeditions of one Power can cross the sea freely, those of the other belligerent will be unable to do so.

Provided that military resistance to a landing can be overcome, complete command of the sea gives to the nation possessing it the power of employing a first-class field army to invade the home territory of an oversea enemy, and so bring the war to a conclusion by a rapid blow at the vitals. I propose to exclude this case from consideration, because we are not in a position to do this, and at present no Power maintains a strong enough fleet to carry out such a policy against us. If we ever do allow such a possibility, a nation in arms cannot employ its strength, and so cannot save the Empire any more than a baby in arms can; though I think we shall all agree that, besides sea command, we require not only a nation in arms, but an Empire in arms, and lots of British babies in arms of the right sort, to prepare for emergencies that may have to be dealt with.

Like the term "sea command," I feel that the word "invasion" is a somewhat vague term, requiring definition. In this paper I am applying it to the employment in the enemy's territory of military forces of a sufficient size to require lines of communication with their own country. I exclude the action of comparatively small forces that can live on the country as they go, and do as much damage as possible without any attempt at permanent occupation of territory. In an industrial country like our own, uneducated to war conditions obtaining in countries whose geographical position is less fortunate, operations of this nature, even if only temporarily successful, might have an unfortunate result. It is the avowed intention of two successive Governments to make provision against such a possibility, and unless this is done it is difficult to estimate the extent to which the Government might be hampered in carrying out a broad strategical plan to ensure success in war.

The territory of the Empire must be secured, not only against external aggression but also against internal dissension, and whatever the strategic weapon may be, it must be wielded by the will of a sound population imbued with a spirit of patriotism. Going back again

to the simile between nations and individuals fighting, we can remember that a sick man, holding the best tempered sword that science can produce, may be overpowered by a vigorous and healthy man carrying nothing more formidable than a stout cudgel.

## Strategical Principles.

Having touched upon the broad aspects of the problem before us, let us consider the mobile forces employed by sea and land in order to strike the enemy, and the general principles governing their employment. The forces referred to are, of course, fleets and field armies. Concentration of effort we know to be essential to successful strategy, and in the strategy we are dealing with, effort both on land and sea must be considered in relation to the whole. This is an ideal for us to work for; we have had a recent object lesson in the war in the Far East, and we ought to realise the tremendous advantage enjoyed by Japan in the possession of an expert central executive, working in the name of the Emperor, controlling the "amphibious" strategy and directing the general plan of operations so that, be they naval or military, or joint naval and military duties, the greatest assistance can be obtained from each Service in bringing about the desired result. A fleet and an army, working without some such expert control, may be compared to two arms striking and parrying independently, without the control and co-ordination of eye and brain —a method which would not be likely to lead to success in a boxing competition. In the Committee of Imperial Defence we have an advisory body with expert knowledge to assist in co-ordinating our peace policy, and in war time we shall presumably have some expert central executive to direct our fleets and armies to combined action, as the Japanese fleets and armies were directed in the late war.

The importance of concentration is made familiar to all soldiers and seamen from their Service childhood, and we all know that nothing is simpler in theory and nothing more difficult in practice. While maintaining a superior force at the critical point ourselves, or a force combined with a position that gives it superiority, the object is to induce the enemy to disperse his mobile force by employing every form of diversion to distract him from the real decisive operation, and force him to form detachments. Concentration of purpose must be kept in view, as well as such concentration of forces as is required to ensure decisive action.

Having prepared for a combined effort by all the forces at our disposal, both by sea and land, the question arises, what we ought to strike at. History teaches us that the first strategical objective must be the mobile forces of the enemy. You are no doubt familiar with Napoleon's saying: "There are many good generals in Europe, but they see too many things at a time. . . . I see nothing but the enemy's masses, and I endeavour to destroy them, certain that all the accessories will fall by themselves." This is land strategy in a nutshell; but we have to go one better than Napoleon, and consider concentration of effort against mobile forces, both by sea and land. Which force we must devote the most attention to can only be decided in each individual case. Against some countries our policy, both naval and military, should be to study the effect that can be produced against the hostile field armies, because these countries may some day be in a position to strike us over our land frontiers, and drain our whole resources for their protection. Against other countries we may have

to co-ordinate the strategy of our sea and land forces with a view to the destruction of the hostile fleet, because that could not only wound us most seriously at sea, but could prepare the way for the employment of hostile field armies in our territory.

In all cases the destruction of the hostile fleet is of the very greatest importance to us, and the first operations against it will be conducted by our own fleet, assisted by the army employed in holding the necessary bases of operations and anchorages, and possibly by military expeditions despatched in order to cause the enemy to form detachments, or for other reasons, which will be referred to later.

The present audience is, of course, familiar with the principles of strategy applied to land warfare; but since, as we have seen, the first operations must be conducted by sea, it will perhaps be valuable to us to consider some of the differences between the methods of applying what are really identical principles by sea and by land.

Firstly, as regards concentration: Food supply difficulties frequently make the concentration of large armies impossible in certain areas. It is not so with fleets. They can get along for several months on the provisions actually carried in the ships.

Secondly, as regards inducing the enemy to disperse his forces: The principle is the same both by land and sea, but in the latter case the inducements may be even more attractive. Sea-borne trade, oversea territory, and a long coast line may handicap naval strategy, because of insistent demands for local protection involving dispersion of force. We are rather badly handicapped ourselves in this respect.

Example—Population of United States sea-board in 1898 (if truly reported).

In connection with this point, we all know the principle that detachments of force may be justified if they "contain" superior forces of the enemy, and we know that on land these weak "containing" forces have the power, while avoiding serious action, to cause much delay to superior forces of the enemy by obliging them to deploy and so develop their strength. Fleets can develop their full strength immediately, so that an inferior fleet has practically no such power against a superior one at sea after contact has been obtained.

On the other hand, fleets sheltering in defended harbours might possibly "contain," not only superior naval forces, but also large armies.

Example—Russian fleet in Port Arthur, 1904.

An unlocated fleet may have a similar "containing" effect.

Thirdly, we come to what is, perhaps, the chief difference between sea and land strategy, and that is in the influence of lines of communication: Armies, as we know, require an almost daily supply of necessaries, and these are brought to them along obvious routes, quite easy to locate, and therefore very vulnerable. Fleets are independent of supplies of ordinary stores and provisions for at least three months; but although a *constant* supply is not required, yet fuel and engineers' stores are wanted *occasionally*, the length of the intervals depending upon the period under way. Also supplies of ammunition, depending upon war conditions and contact with the enemy. The vulnerable communications of a fleet will therefore be represented by occasional vessels carrying fuel, lubricants, fresh water perhaps, and ammunition. Such stores can be drawn from many directions, and the vessels carrying them can follow various ocean routes, and can avoid capture with more facility than land convoys, which must pass

along well-known roads leading from easily located bases. We may therefore deduce that, unless operating for long periods in waters beyond narrow straits, fleets are far less affected than armies are by the influence of lines of communication.

The above are perhaps the three principal differences affecting the strategical employment of forces by sea and land; but of course there are many others. Among these we may notice:—

1. The different relationship between time and space; ships go farther in an hour than armies on land do in a day.
2. The method of movement: Fleets depend entirely upon mechanical power; armies never entirely so. Hence the relative importance of *matériel* to *personnel* is somewhat greater at sea, because the power of movement depends more upon it. Both by sea and land, of course, the *personnel* forms the dominating factor.
3. Direction and control of movement: Fleets at sea are free to move in any direction, and are not confined to certain lines as armies are. Communication of orders is far quicker, and direction of movement can be altered far more easily and rapidly.
4. Information and communication of intelligence, etc.: Fleets leave no track by which they can be traced. News and orders can be communicated to armies by telegraph with more certainty than to fleets at sea; but wireless telegraphy may be expected soon to place the two upon at least an equal footing.

### Principles and Procedure in "Amphibious Strategy."

Having referred to some of the different conditions affecting war upon an element with which perhaps some of us are less familiar than we are with the land, we can now pass to more definite consideration of the subject before us. The question of the combined action of fleets and armies for a common object has been given great prominence lately, but it is by no means new. Even the term "amphibious war" is an old one. You will find it constantly used in 1759 in a book called "Conjunct Expeditions," where we read that—

> "The Fleet and Army, acting in consort, seem to be the natural Bulwark of these Kingdoms."

And, later on—

> "We don't mean to lessen the Dignity of the Army, but to encourage it to make the Conjunct War their great Object, as the sure way to acquire more Glory, with more Ease."

Not a very high ideal, perhaps, but the recommendation is sounder than the sentiment inspiring it.

Owing to the pressure of public opinion about twenty years ago, it is now the accepted policy of the country to maintain the British fleet at a strength equal to that of any two Powers, with a margin to ensure success, and in considering the margin required, the geographical distribution of possibly hostile fleets must of course be studied, as well as their actual strength. Geographical situation may give strategic advantages that can only be counteracted by the employment of considerably superior force. It is hoped that the electorate are sufficiently

well educated to their own interests to ensure that the necessary standard shall be maintained.

Whatever they may be in practice, the duties of our fleet are simple enough in theory. They consist simply in the destruction of hostile fleets, war vessels of all natures, and transports, that can put to sea. If this can be carried out, then the ocean will be a secure highway for our own vessels, and our territory will be secure from invasion by any large military forces that have to cross the sea to attain their object.

The avowed intention of the present Government is to maintain, for oversea employment in war, a force of six strong divisions and four cavalry brigades, together with sufficient reserves to meet war wastage. To this force we must add the troops which, under certain circumstances, could be provided from India and the Colonies, and the reserve forces that we can train and organise after the outbreak of war. These are the military forces we can move and concentrate against the enemy, and therefore those available for our main strategical operations, but in addition we must assume that provision is made to ensure that the United Kingdom is absolutely secure. This can only be the case if sufficient mobile forces are maintained in a state of preparation enabling them to deal with any raiding bodies that could land upon our shores, assuming the predominance of our fleet over that of the enemy, which we know to be a condition essential to success in any strategical plans that we may contemplate.

The British Empire has become a Continental Power, with land frontiers which may some day become vulnerable by hostile field armies, and it is possible that the maximum army we can collect in the Empire may be required to defend our oversea territory, not necessarily by local defensive action, but quite possibly by offensive action elsewhere.

Military forces may also be required to maintain our rule over other races, and to deal with internal troubles. Examples—South Africa, India, E. and W. Africa. It is important to remember that between 1880 and 1890 the population of the Empire, excluding India, was increased by no less than *82 per cent.*, and nearly the whole of this increase was due to expansion of territory peopled by alien races.

Studying the vulnerability of the Empire, it seems probable that in some cases our fleet will be able to hold sufficient command of the sea to permit the immediate transport of military expeditions to the points required. We must, however, consider the case where this condition does not obtain until it has been fought for.

Concentration of effort we all know to be of the utmost importance in strategy, and we have also seen that obtaining the so-called "command of the sea" is important in amphibious operations, especially to a Power dependent upon free sea communication for its existence.

The attainment of really satisfactory sea command involves the destruction of the enemy's war vessels. This is primarily a naval operation, but there are many ways in which the Army can help. It can and does protect territory, also harbours, affording secure anchorages, and containing docks, repairing facilities, ammunition and other stores required by the fleet. In Mahan's words:—"Control of a maritime region is ensured primarily by a navy, secondarily by positions suitably chosen and spaced from one another, upon which as bases the Navy rests, and from which it can exert its strength." Their security enables the Navy to avoid detaching forces for defensive purposes, and also helps to afford a hardly earned period of rest to

the crews of vessels which put into port. The Army also defends certain harbours, affording ports of refuge for merchant vessels, and so helps the Navy in their protective duties to some extent; and, generally speaking, the greater our territorial security, the greater will be the strategic freedom of our fleets.

But it is not only by defensive action that the Army can help the fleet to obtain command of the sea. Even before the Navy has completely broken down the power of the hostile fleet, military expeditions may, in some parts of the world, be employed against the oversea possessions of the enemy, in the hope of causing him to detach naval forces for their protection, and it has been suggested that raids against the enemy's home territory might be undertaken with the same object. Raiding forces may also be employed to seize or destroy cable centres, wireless telegraphy stations, and other important centres of information. The Army may also be called upon to seize and hold advanced bases, especially for our torpedo craft, and recent wars give us several examples of the employment of military forces, either to drive hostile war vessels out of harbour, or actually to assist in their destruction if they will not go out.

"The Command of the Sea," we are told in the Admiralty memorandum on "Sea Power" (1903), "is determined by the result of great battles at sea. . . . in which each side concentrates his whole available force for the decisive struggle."

This statement is borne out by recent examples in modern war, in the case of the destruction of the Chinese fleet in 1894, the Spanish fleet in 1898, and the Russian fleets in 1904 and 1905. The Admiralty memorandum, referred to above, speaks of great battles "at sea," and of course it is the object of the stronger power to get the enemy's fleet to sea to fight such battles. It is easy to find examples where armies have helped fleets in this connection. In 1894, the remnants of the Chinese fleet put to sea from Port Arthur, when the Japanese Army threatened that place. In 1898, the Spanish fleet left Santiago because of a weak military expedition sent from the United States. In 1904, although we have not direct evidence of the fact, yet it seems most probable that the Russian fleet left Port Arthur on 10th August on account of the pressure of the Japanese Army on the land defences.

Then we must remember that the "great battle at sea" does not always end in the complete destruction of one of the fleets, as it did in the case of the battle of the Sea of Japan in 1905. After the battle of the Yalu in 1894, the Chinese fleet was not finished off until after combined naval and military operations at Wei-hai-wei. Again, in 1904, the Russian fleet took refuge in Port Arthur after the battle of 10th August, and was finally captured by the Japanese besieging army, in January, 1905. It is possible to imagine cases where we also might have to undertake combined operations to effect the destruction of hostile war vessels.

Other methods by which the Army can help the fleet are referred to above, and we can now pass on to the question of the offensive employment of military expeditions, after sufficient command of the sea has been obtained. We must bear in mind, though, that as long as the hostile fleet can seriously menace us, it is important to make no demands upon our own fleet that would interfere with its responsible task. This being understood, the turn comes for the fleet to help the Army.

I purposely omit considering the possibility of the enemy's obtaining sufficient sea command to enable him to transport to and maintain in our home territory large invading forces, because I consider that if he obtained it, the war might possibly be prolonged for a time, but could never be brought to a successful conclusion by our Army. Neither our financial nor our economic system would stand the strain of carrying on the operations; since *ex hypothesi*, our whole external trade would have become precarious. We will, therefore, confine our attention to the oversea employment of the army, assuming our success at sea, and that sufficient local forces are available in the United Kingdom to deal with any hostile forces that may escape destruction by the navy before they land.

The ideal of the amphibious strategist would be, to have at his disposal a large enough army to invade the enemy's country, defeat the hostile field army, and break down all power of resistance. This ideal is at present unattainable by us, although, in case of alliances, a force of six divisions and four cavalry brigades would be an appreciable factor, even on the Continent of Europe, and it is necessary to study conditions under which our treaty obligations would necessitate such application of our land forces.

Without aspiring to deal unaided with the field army of a first-class Continental Power, we must remember that the moral effect produced by the military forces of a Power having sea command is out of all proportion to the actual strength of those forces, because military expeditions can go in an hour by sea about as far as they can go in a day by land.

"The Conjunct Armament," says the old eighteenth century book I quoted before, "goes against the enemy like an arrow from a bow. "It gives no warning where it is to come, and leaves no traces where it has passed. It must wound too where it hits, if rightly pointed at some vulnerable part. When this is done, a new aim is directed. The enemy in the meantime, like a man in the dark, labouring under an unwieldy shield, moves slowly to and fro distracted and at a loss which way to go, to guard against the stroke of the invisible hand."

Sea power thus gives great "containing" power to military expeditions, enabling them to render immobile large numbers of the enemy's land forces, *provided that the hostile country has a long and vulnerable coast line.*

Example:—Chile Revolutionary War, 1891.

If it is decided actually to land an expedition for serious operations, then the question of a suitable objective must be carefully studied. The best test to apply is:—"To what extent will the issue of the war be affected by success?" The arrow must be "pointed at some vulnerable part"—as vital a one as possible. History gives us examples of valuable man power and money being wasted by launching expeditions broadcast against worthless objectives. Perhaps the best rough test of the importance of an objective is the direct or indirect influence which success would have upon the enemy's mobile forces by sea and land.

Example:—An expeditionary force landed to cut the lines of communication of a field army, and so paralyse its action.

Such an objective actually affects the issue of the war, and increases the chances of success.

Later in a war it may be desirable to consider the question of occupying territory in order to influence the terms of peace, but

nothing should be allowed to interfere with the important principle of concentration of effort to bring the war to a successful conclusion.

Examples:—Pescadores Ids., 1895; Porto Rico, 1898; Saghalien, 1905.

We have noticed the great moral effect which may be produced by a combined expedition directly it starts from home or even before, and we can now consider the advantages conferred upon such an expedition by the command of the sea, after the landing has actually taken place. We all know the importance of a short line of communication for an army on land. With a short line to guard, a larger proportion of the available force can be concentrated for the decisive battle. An army operating near a coast line possessing good harbours can constantly change its base, and so has great freedom of manœuvre if free communication by sea is secured. In areas of operations with a large proportion of coast line, such as peninsulas and islands, this principle is strongly brought out.

Examples:—Wellington in Peninsula, 1813. (Transfer of base from Lisbon to Santander—90 mile line instead of 400, at Vittoria.)

The march of an army along a sea coast, like Wellington's final advance in the Peninsula, or the march of the Japanese along the N.W. coast of Corea in 1904, constitutes only an extension of this principle.

Not only can the base of operations be moved, but the army itself can be embarked at one point on the coast and disembarked at another.

Example:—Egypt, 1882.

Whether a strategical advantage can be so obtained depends upon the time factor and secrecy, and it is important to make a careful calculation of time and space. Embarkation and disembarkation of a large force is an operation that takes time. In some places the governing factor may be the military staff work in getting the troops to the embarking places with everything *in the right order*. Such a condition might possibly obtain in a port like Southampton. If the whole of the wharfage there were available for transports, troops and stores could, perhaps, be got away more quickly than they could be brought to the wharves. The same conditions might apply to a place like Portland, where the assembly places are cramped and approached over a defile formed by one road and one railway bridge. In other cases the governing factor may be the time taken in getting the troops from a beach to the transports and hoisting in the horses, guns, wagons, and stores. The time required for embarkations and disembarkations, using an open beach, will depend, under favourable conditions, upon the boats available, the steam-boats for towing, the tides, and the distance between the transports and the shore, which, of course, depends upon the depth of water. Weather conditions may cause indefinite delay.

For such operations it is important to bear in mind the *total* time, calculated from the moment when the force is withdrawn from one area of operations to the time when it can actually make itself felt in the field elsewhere.

Where time is of importance—as it always is in modern war—it is absolutely necessary, when preparing for an embarkation, to bear in mind the rule that whatever has to come out of the transports last should be put into them first. One can imagine the delay that would ensue if, on arrival at the destination, units ordered to land in a hurry to obtain a footing on shore were to find that their second line

transport was all stowed on the top of the first line transport, so that ammunition and entrenching tools could not be got at. With a little forethought, extra time spent in embarkation might save far more time on the total operation.

Examples of such operations:—Egypt, 1882. (Army Corps Staff Tour, 1906.)

We saw how the Army can help in naval operations, and we must also realise the great help given by the Navy to oversea expeditions.

The Admiralty undertakes the transport of troops to their destination, naval assistance is given both in their embarkation and disembarkation, the safety of an expedition is secured by naval action until it is landed, and the safety of its line of communication with the home country afterwards.

Should the lines of communication of a hostile military force pass near the coast, then by naval action such communications can sometimes be cut, and forces badly wanted by the enemy at the front may be delayed.

The Navy can also in some cases cause the enemy to form detachments from his available military force, in order to meet general raids on his coast.

In times of emergency we have also had examples of naval brigades being employed to cover landings, and to strengthen military forces in the field.

Example:—Manchuria, 1904.

In the case of military operations near the sea, armies can, in favourable topographical conditions, receive tactical support by gunfire from ships.

Examples:—Nanshan, 1904; Valparaiso, 1891.

### Illustration of Principles.

Having now considered some of the principles affecting amphibious operations, and the combined action of fleets and armies for a common object, success in war, it would perhaps be useful to study the actual history of wars in which these principles have been illustrated after the general introduction of steam propulsion for ships; but since Colonel Lonsdale Hale's offer to provide Statesmen with facts from military history, either to prove, or disprove, any given principle, one is naturally rather timid about advancing examples in support of theories.

During the last few years several "amphibious" wars have taken place under modern conditions, including:—

1. The Chile Revolution of 1891.
2. The China-Japan War of 1894-5.
3. The Spanish-American War of 1898.
4. The Russo-Japanese War of 1904-5.

These wars provide many examples to illustrate the principles we have been considering, but time does not permit us to investigate these examples in detail this afternoon. Perhaps on some future occasion you will grant me an opportunity of attempting to do so.

### Conclusion.

I trust we shall all agree about the importance of "Amphibious Strategy" as a study for the population of an Empire like our own, and also that co-operation between the two services in war will be

facilitated by their constant association in peace time. Of late years we have seen much progress in these matters. If each service thinks how to help the other, before considering how much help to expect, then combined action in war will be assured.

We want not only combination but control, and we hope that, by the time when we have to fight for our existence in an amphibious war, with the hour will arise the man who can direct the whole resources of the Empire to secure a successful issue. In order to do so to the best effect he will want to combine a knowledge of our own vitals with that of the enemy's, and he must have mastered the principles governing the combined action of fleets and armies.

As an example of wide mental grasp of an amphibious strategical problem, I should like to refer to a recent lecture delivered at the Staff College, on the question whether the Japanese should have pressed their attacks on Port Arthur as they did. It was pointed out to be a question of "Interior Lines"—which involved a complicated calculation of the *time* problem, so important in all strategy. The Japanese armies in Manchuria were on interior lines against forces north and south of them. Considering the *mobile* forces they had:—

To the *North*.—Kuropatkin's field army, and reinforcements that could be brought out to it, as time passed.

To the *South*.—The mobile portion of the Port Arthur garrison, the fleet in the harbour, and the Baltic fleet, which could be brought out to reinforce it, in time.

All the time problems involved were most complicated; but the conclusion come to was that, as far as could be judged, the Japanese were right to try and make certain of the Port Arthur forces first, and then turn their whole military strength against Kuropatkin's army.

It is the fashion to recommend special methods of thought to different classes in this country. Mr. Haldane advocates "clear thinking" for Statesmen. The man in the street is recommended to "Think Imperially," by Mr. Chamberlain—and, from the nature of the strategical problems we have to deal with in war, I think we may deduce that the soldier and the seaman should "*Think amphibiously.*"

Field-Marshal The Right Hon. EARL ROBERTS, K.G., K.P., G.C.B., etc.:—I have really very little to add to what Colonel Aston has told us. He has given us an interesting lecture, for which I am sure we are all much obliged. I quite agree with Colonel Aston's final paragraph, that we must "think amphibiously," but personally, I think we must also "think clearly" and "think Imperially." Neither one nor the other will do by itself. "Clear thinking" ought to put us on the right lines, but unless it is guided by "Imperial thinking" we may easily go off them, and it is clear to me that the right lines cannot be properly maintained unless we also learn to "think amphibiously." The difficulty I see in amphibious strategy is a point that Colonel Aston has referred to, viz.:—whether the right man will arise when the emergency occurs. It is very difficult to imagine one and the same man directing operations both by land and by sea. It may be possible certainly, but the conduct of operations by sea and by land is so very different. I thoroughly appreciate co-operation between the two Services, and I am delighted to see that at the Staff College and elsewhere co-operation is being carried on very extensively. Naval officers come to the Staff College, and our Staff College

officers go to Portsmouth and other places to see what is being done on board our ships. That is, to my mind, the most satisfactory method of co-operation, and it must result, if carried on satisfactorily in peace time, to produce good results in the event of war. I do not know that I need say anything more. The instances that Colonel Aston has alluded to are all of great interest and great value. I myself have not the slightest doubt that the decision arrived at by the lecturer at the Staff College, referred to by Colonel Aston, namely, that the Japanese were right in facing both North and South in pressing their attacks on Port Arthur, as they did at the particular time, was the right one. They had a great goal before them; and it was a difficult task. Port Arthur was tremendously strongly fortified, but the object gained by the capture of Port Arthur and the Russian fleet in its harbour at once freed their Navy for any other purposes that might be required. If the war had been carried on, the Japanese Navy would have been free to carry on operations against the Russian fleet then lying in Vladivostok, and I think whatever the loss may have been, and whatever the doubt may have been as to whether sufficient available troops could be spared from the North to operate at the South against Port Arthur, the Japanese were quite right to undertake the difficult and hazardous task. A few days ago Admiral Baron Yamamoto, who came here with Prince Fushimi, sent me a very delightful picture of Port Arthur, showing all its fortifications and the line by which the Japanese advanced. It was certainly a most difficult place to tackle, but that they were right in doing it I have no possible doubt.

Admiral Sir Cyprian A. G. Bridge, G.C.B.:—I think it is very strong evidence, not to say convincing proof, of the interest that is taken in the great subject which Col. Aston has chosen for the lecture that so many people have come here in spite of all the attractions that might have taken them away at this moment. It is not likely that I should find myself in disagreement with anything that Colonel Aston has said to-day. The subject is one which it so happens that he and I had to deal with in some of its aspects many years ago. I do not think there was any difference of opinion between us then, and I am sure there is not any difference of opinion between us now. But there are one or two points in which I will not say he did not quite carry me with him, but one or two points on which it would be convenient to have a more detailed explanation. He mentioned very judiciously, and very necessarily I think, the change in the economical condition of various countries. That is a thing which certainly ought to be taken into account when you are considering Imperial or amphibious strategy. It is generally supposed, and it is almost taken for granted, that during the great wars in the latter part of the 18th and the early part of the 19th Century this country was entirely self-supporting in the matter of food. As a matter of fact that is not the case. The figures relating to the indispensable importation of food stuffs into the United Kingdom during that period were absolutely large, and if they were translated into figures suitable to the present they would appear enormous.[1] Of course, they are not proportionately so large as the

[1] In the period 1801-10, the population of the island of Great Britain averaged 11,769,725. It was calculated that, allowing an annual consumption of six quarters a head, 801,261 persons were fed on imported wheat. At the amount (342 lbs. per head) officially allowed now, the numbers fed on foreign wheat would have been 871,634. The importation was apparently about 1,200,000 quarters.

importation at present, but they went into many thousands of quarters. On the other hand, as a set off against that, Continental nations are now, with few exceptions, dependent to a certain extent upon foreign importations for food. I do not think there is one of the great military nations of Europe, unless it is Russia—and I do not think it can be said even of Russia—that is not to some extent dependent on foreign and transoceanic transportation for no inconsiderable portion of the food of the population. That is a novel condition of affairs. These changes in conditions do not affect the fundamental principles of war or strategy, because no changes in conditions can affect fundamental principles. If such a change could affect them, the principles would not be fundamental. But at the same time the changes are not things to be left out of sight. Colonel Aston pointed out the importance of communications at sea in naval warfare. I am one of those who believe that if you boil down naval warfare and naval strategy till you got its ultimate solid constituent, you will find that it is essentially a matter of sea-communications. I very much doubt if there is so much difference between the communications of an army and the communications of a fleet as is sometimes supposed. The experiences of the last war in the Far East, where one of the belligerents depended upon a long single line of communications for the whole of his supplies and reinforcements, are almost unique. I have always understood that it is one of the essential conditions of military strategy that you should extend the area from which your operating field army can draw its supplies, so that you are not dependent upon any single line or even one or two fixed lines of communication. Take, for instance, the case of forage for the animals attending an army, that would be obtained, I fancy, from all round; your army would be, as it were, a centre on which would converge various lines of supply. The case of the daily food of the army would be much the same; whereas, on the other hand, the ammunition, the clothing, and the reinforcements would come probably from the Mother Country, or from the centre of Government, or the established depôts and arsenals in your own country along recognised lines of supply. Take, again, the case of Welsh coal, which would be used by all the Navies in the world if they could get it; that comes from one place of production, and must go along more or less fixed lines of communication. I just mention these things to show the necessity, when considering amphibious strategy, of trying to see as far as you can the similarity between the conditions imposed on the land and sea forces when operating against an enemy. If we could persuade people that there is a considerable amount of similarity between them, there is much more likelihood of getting people to consider them. Then, turning to another point, you will remember that Colonel Aston appealed to the celebrated German authority, Clausewitz, and he also appealed to the dictum of the great Napoleon. It is a very remarkable thing, it is especially remarkable in these days, in this year 1907, that we so frequently appeal to the opinions and the conclusions of foreign officers, foreign military officers; very likely upon purely Naval or maritime questions, and so rarely appeal to the opinions of our own countrymen. The ideas of Clausewitz were expressed and put into actual operation by Nelson when Clausewitz was a boy in his teens; and the very thing which Colonel Aston has mentioned to-day, the maxim of Napoleon, that the enemy's masses were the things to go for, were put into operation, and had been frequently expressed in well-known sentences by Nelson some years, I believe, before Napoleon gave utterance to the expression which was recalled to our memory by Colonel Aston this afternoon. That is no

reason why they should not have been recalled to our memory. We must know the maxims and the conclusions at which Napoleon and the other great soldiers arrived, but there is no reason why we should not know those of our own officers as well. I think, therefore, that Colonel Aston has conferred upon us a benefit by delivering us this lecture, a lecture which, without any disparagement to any of the other lectures which have been delivered in this theatre, is one of the most admirable ever heard here, because of its powerful arguments, the lucidity with which they were expressed, and the gracefulness of its delivery. Among other benefits that he has conferred upon us, he has taught us to bear in mind that the two branches of strategy, Naval and Military, are inseparably connected and cannot be divided.

Brigadier-General Sir Henry Rawlinson, Bart., C.V.O., C.B. :—I should just like to refer to one point that Lord Roberts has drawn attention to, namely, that when the hour arrives we hope that we shall also be able to find the man. It may be profitable to us to consider for one moment how in the Russo-Japanese War the Japanese did unquestionably find the man. Nothing is more noticeable in that war than the precision with which the naval and military manœuvres followed one another in remarkable sequence; how the Army took advantage of what the Navy enabled it to accomplish; and how the two Services worked in the closest touch with one another for their mutual benefit. How did Japan bring this about? How was the combined naval and military strategy initiated and carried out? It was by the institution of what we understand was called the Imperial Headquarters. The Imperial Headquarters took into consideration naval as well as military strategy, and carried through the principles which were initiated by the combined General Staff of both Services. They really were a General Staff for the Navy and the Army together. We have in our own country something of the same sort in the Imperial Defence Committee; but it is a consultative body, not an executive one. The Imperial Headquarters in Japan were executive, and we can only hope that our Defence Committee may in a case of emergency become executive. We really want, also, a school in which to train our officers in matters which deal with both the naval and military side of the question. Colonel Aston has rendered yeoman service in starting the teaching of naval strategy to military officers at the Staff College; he has also brought the College into touch with the War Course College at Portsmouth, and, I hope, started a system of education which will be of assistance to officers of both Services; but we want more than that. If we are ever going to have such a General Staff as the Japanese had in their Imperial Headquarters, I think it is essential—and I think most people will agree with me—that an amplification of the Defence Committee, or some kind of development from it, is necessary if we are going to produce the right man when the hour arrives.

Mr. Julian Corbett :—I should like to recall to your notice that we have fought wars in the past with great success which were essentially, from end to end, amphibious wars. All the wars by which our Empire was built up were wars of that character. You will remember in particular the Seven Years' War, which was conducted entirely as an amphibious war. We did not seek to get at the vitals of our enemy at all, but were content to see the enemy did not get at ours. Offensively we fixed our eyes on the limited object of that war, which was the conquest of Canada. We massed all the Army we could possibly spare in that quarter and co-

operated with the fleet, the fleet maintaining and covering the communications. We had there the fundamental conditions of combined naval and military strategy. At the same time we had the Army reduced in the defensive home theatres to its lowest defensive limit, and a fleet which not only covered our offensive in Canada by an extensive blockade, but by concerted action with the Home Army, gave it a capacity for counter-attack which materially confused the French offensive strategy and gave our home defence an active character. The result was by far the most successful war we ever waged. How was it done? The greatest difficulty undoubtedly is finding a means of co-ordinating the action of the two Services. There is a little phrase which appears in the Orders of that time to which I should like to call your attention. You find an Admiral receiving a notice to this effect: "I am to instruct you that henceforth you are to receive your orders from the Secretary of State." Hitherto, of course, he had been receiving them from the Admiralty. Officers in command of the Military forces received similar intimations. That little phrase meant that Pitt, a civilian, after careful consultation with Anson and Ligonier and usually with the Admiral and General concerned, had taken the supreme direction into his own hands. It was not a new idea at all; it was always done. Our old appreciation of the value of using the Army and Navy together dates back a very long way. Certainly there was no man who had a deeper appreciation of it than Marlborough. The way in which the co-ordination was done constitutionally was by what was known as the Secret or Inner Committee of the Council. It was composed not necessarily of Cabinet Ministers, but for war direction always of the principal Cabinet Ministers, the Chancellor of the Exchequer, the two Foreign Secretaries, the Lord Treasurer, and the First Lord of the Admiralty, with the Commander-in-Chief or the Master of the Ordnance. They had the power to call anybody to their counsels. There was a case in which a Dutch Admiral was called during the war of the Spanish Succession where it was necessary to co-operate with the Dutch fleet. That Secret Committee, under which our wars were fought in the old days, bears a close resemblance to the Council of Defence as it at present exists, except that it had no permanent bureau; and there seems no reason, as has been suggested by Sir Henry Rawlinson, why, by tradition, by history, by national sentiment, it should not be developed into a kind of Grand General Staff which would exactly suit our feelings and our position. We have a little forgotten the fact, which was so strongly expressed in the admirable little book quoted by the lecturer on "Conjunct Expeditions," written as long ago as 1759 in the palmy days of Pitt's operations by combined expeditions—we have forgotten what the Services used to think on this point, when they did feel very strongly about it, so strongly that they were divided into two distinct schools. There was, first of all, the "Continental" school, who always desired *Le Grande Guerre* under the great military leaders on the Continent, and there was what might have been called, only it was not so named in those days, the "Land and Water" school. Pitt belonged to that "Land-and Water" school. He was of opinion that when we once began to use our Army without our fleet it was just as if a man chose to fight with one hand at a time instead of fighting with both. Our Army certainly is weak, but when used with the Navy, as Pitt and Marlborough both proved, and as Frederick the Great and Clausewitz recognised, it acquires certain peculiar powers out of all proportion to its numerical strength. They are powers which for geographical reasons no Continental Army can hope to reach, and which are extremely difficult for any Continental staff to calculate.

The Hon. J. R. Fortescue (King's Librarian) cited the campaign of Maida as an instance, among others, of a successful amphibious attack upon an enemy's communications, and the Helder campaign in 1799 as an example of the capture of a hostile fleet by joint operations of the fleet and army. It would not be difficult to illustrate every amphibious operation named by Colonel Aston from British military history.

Colonel G. G. Aston, in reply, said:—I have only to thank you, gentlemen, for not taking a more critical line with regard to my lecture. I do not think there have been any points raised on which it is necessary for me to enlarge, and I, therefore, can only thank you for the reception you have given to what I have placed before you, and for the patient way in which you have heard me on such a hot afternoon. As you have already listened to me for over 55 minutes, I think the best way in which I can show my gratitude to you is by sitting down.

The Chairman (Admiral of the Fleet, Sir A. K. Wilson):—There is no doubt that the lecture has been a most interesting one, and in one respect it has been a little too good, namely, that you have not been able to find any points in it to which you can take exception, so that we could have a good argument. We always like to come here and have both sides of the question discussed, but Colonel Aston has gone so carefully into his subject that there is very little to criticise. There is no doubt that he touched a difficult point where he asked, who is to control the two Services in order to get the most out of them. There is not the slightest doubt that when the Army and Navy go together you will get the greatest cordiality between the two Services; you will get the greatest anxiety on both sides for the one to help the other; but unless you have something more than willingness on the part of the one to help the other, you will not get the best result. There is always a tendency, I think I may say, from the naval side when you are asked to make great sacrifices to help the Army to say "I have got my responsibility for my ships, and if I do this or that I do not quite know how far it will go." We do not know enough about what goes on on shore to understand really what the first step will lead us into; and I have no doubt there are similar difficulties felt by military men in assisting or meeting the requirements of the Navy. There is no doubt that the importance of working together is very great indeed. Colonel Aston has pointed out what I might call the two main points. The one is that we want the Army to help the Navy by capturing a port that holds some of the ships; and the other is the employment of a small force for the purpose of worrying a very large force of the enemy, which, I think, is the sort of thing we may very likely be called upon to exercise. For an operation of that kind, you must have not only the people at headquarters to organise it, but you must have the very closest touch between the Admiral afloat and the General who is to conduct the operations on shore. I was glad to hear Sir Henry Rawlinson's remarks, because he has done more than anybody else to try to bring about this close touch between the two Services. We have had a certain amount of joint operations between the Army and the Navy in the last few years. We had the landing of troops on the coast of Essex by the Cruiser Squadron; two years ago we had some operations on the coast of Ireland under General Rimington, and so on, which were extremely useful. As you know, we now have Naval manœuvres, and I think the time has come when we should have annually joint operations of our Naval and Military forces. I see really no

difficulty in planning such operations. The worst result would be that we should learn a few of our mistakes. What we want to do is to get the Army and the Navy to work together; we want to get the Generals and the Admirals to understand each other, and you can never do that without getting them to make mistakes together. Nobody learns anything without making mistakes. The first thing you have to do is to give them problems to work out. It does not matter whether they make mistakes or not; everybody will learn something about it from them. Our Naval manœuvres have gone on from year to year, and we have learnt more and more from them every year; we have got them more and more to the point every year. Our Naval manœuvres in the past used sometimes to end in fiasco; things were planned, but nothing came out of them. Now every year we are learning more and more from them; and I am quite sure if joint operations of this sort were started we should get a great deal of benefit out of them every year, and that we should very soon get the closest touch between the two Services. I am sure it is your wish that I should cordially thank Colonel Aston for the very interesting lecture he has given us to-day.

Lord ROBERTS :—Before I propose a vote of thanks to our Chairman for taking the Chair this afternoon, I should like to say that I entirely agree with what Sir Cyprian Bridge has said as to the lines of communication of the Army and Navy being very similar. I am quite certain that the changed conditions of warfare apply as much to the Navy as they do to the Army. It is impossible to examine a sketch of a Naval battle of recent years and come to this Institution and look at the plans of the Battle of Trafalgar, or to compare the plans of a battle on land at the present time with such a battle as Waterloo, for instance, without realising what an extraordinary difference has taken place in the conditions of warfare, both on land and sea, during the last 50 years. Long reaching weapons have brought all this about, and no doubt we shall have longer reaching weapons as time goes on. The authorities, I believe, are already trying a bullet that will have a point-blank range of 800 yards, and that will make still further changes. We must all be prepared to meet these changes, and I believe myself that the Army and Navy as regards all matters of war are very similar. I should like to say, with regard to Mr. Corbett's remarks, how very glad I should be if there were such a Council as he referred to; but whatever Council of War there may be in the future, I most sincerely hope that the Admirals and Generals in the field will be allowed to act as they think right. I should very much like, if ever I had the command of an Army on land, to have as my coadjutor on the sea Admiral of the Fleet Sir Arthur Wilson. I have very much pleasure in proposing a vote of thanks to him for occupying the Chair to-day.

# OPINIONS WITH REGARD TO THE ATTACK OF ENTRENCHED POSITIONS.

Translation of reports made by the Divisional Chiefs of Staff of the Second Japanese Army, and issued to the officers of the Manchurian Army in November, 1904.[1]

*Communicated by the General Staff.*

OPINIONS OF THE CHIEF OF THE STAFF, 3RD DIVISION.

1. Reconnaissance in general.
2. Preparation for the commencement of an attack.
   - *a.* Selection of positions for the artillery.
   - *b.* Organisation of the artillery to be employed in the attack.
   - *c.* General distribution of troops in an attack, and decision as to what guns shall first be brought into action.
   - *d.* The occupation of their position by the first batteries to be brought into action.
   - *e.* Advance of the attacking army and protection to be afforded to the artillery while taking up positions.
3. The initial stages of an attack.
4. General engagement.
5. Decisive battle.
6. Movements at the conclusion of a successful attack.
7. Conclusion.

### 1. *Reconnaissance in general.*

When the attacking army has made sure by reconnaissance that the enemy, even in small forces, is occupying an entrenched position, it should advance with great caution, carefully screening its movements, to within 8 or 10 kilometres of the position. Arrived on this line, it will take necessary precautions against a sortie, and will despatch a few reconnoitring detachments, consisting of infantry and

[1] These reports were referred to in the *Internationale Revue* of February last and were subsequently obtained in the original Japanese and translated. It has since been ascertained that an Austrian translation of them, stated to have been made from an English version, appeared in a book entitled "Der Russisch-Japanische Krieg: Urtheile und Beobachtungen von Mitkämpfern" which was published at the end of 1906. Nothing is known of this English version.

artillery, in different directions. These detachments should advance to within a suitable distance of the position before dawn, and then commence a reconnaissance fight. During this engagement the main part of the cavalry should be employed in reconnoitring the enemy's flanks and rear.

The commander of the attacking army will then decide, from what he sees and from the information collected, what he will do next; that is, whether he shall (*a*) fight a field battle, (*b*) employ siege operations, or (*c*) endeavour to manœuvre the enemy out of his position.

2. *Preparation for the Commencement of an Attack.*

*a*. Selection of positions for the artillery.

The commander of the attacking army will inform his C.R.A. of his intention with regard to the attack. One staff officer and a few artillery and engineer officers will be attached to the C.R.A. They will be despatched with the reconnoitring parties with the object of selecting suitable positions for the artillery. The positions should be selected with due regard to the different classes of guns to be employed. Every measure which the situation admits of must be carried out for the preparation of the position.

The artillery positions must be selected with due regard to the most effective range of all the different classes of guns to be employed.

*b*. Organisation of the artillery to be employed in the attack.

The artillery to be employed in the attack should consist of the main portion of the field guns and the whole of the guns captured from the enemy. A large number of high explosive shell should be issued to them. These guns should be under the command of an artillery officer, responsible to the commander of the main attack.

A few mounted orderlies should be given to this artillery commander, as messengers, and he should be provided with a powerful telescope. Either telephone communication or a chain of mounted messengers should be established between this artillery commander and general headquarters, and, if necessary, similar means of communication should be established between the artillery commander and his subordinate commanders.

*c*. General distribution of troops in an attack and decision as as to what guns shall first be brought into action.

The commander of the attacking army will decide, in accordance with the information gathered from different sources, the general distribution of troops for the attack. This distribution will best be made by taking the direction of advance of the army as the guiding factor, and arranging divisions parallel to each other on and on each side of it. Then its front of attack will be pointed out to each division. At this period a comparatively strong reserve should be kept in hand. With regard to the artillery, which is first to be brought into action, it would probably be best to employ the divisional artillery.

*d*. The occupation of their position by the first batteries to be brought into action.

The artillery should take up its assigned position under cover of night, and such arrangements as earthworks, etc., necessary for its protection, should be completed before dawn.

Owing to the difficulty of an advance at night, artillery should start to take up its positions early at night rather than late. Every commanding officer, juniors included, should examine the ground by day in order to be able to carry out his required duties at night.

*e.* Advance of the attacking army and protection to be afforded to the artillery while taking up positions.

To cover the development of an attack and to protect the artillery while taking up its positions, the front line of the attacking army should advance to a line about 1,000 metres from the enemy, dig shelter trenches, and be in occupation of them when the artillery is moving into position.

Therefore, the infantry told off to form the first line must often be ready to commence its forward move at sunset.

### 3. *The Initial Stages of an Attack.*

The guns first placed in position should, with the object of reconnaissance, open fire simultaneously at their own targets at daybreak. The infantry, on the other hand, should lie concealed behind cover during the day time, and should not fire except in case of emergency. In the meantime, both artillery and infantry detach their own scouts to the front to clear up the enemy's situation, examine the features of the ground, observe the effects of fire, etc.

The commander of the attacking army will decide, from what he sees and from the information collected from different sources, against what point he shall direct his main attack, and what method he shall employ in carrying it out. Experience in the past has, however, taught us that, even with the assistance of this trial fight, the commander of the attacking army is often unable thoroughly to understand the situation of the enemy. Every commanding officer must, therefore, bear in mind that the safety or danger of the army is entirely dependent on the efficient conduct, or otherwise, of reconnaissance during this preliminary action, and each one must try and obtain good results from it, even if it costs him the lives of some of his men.

### 4. *General Engagement.*

The artillery to be employed in the main attack, after the preparations for the attack have been completed, will open fire at early dawn. Previous to this, the infantry of the first line, moving under cover of darkness, should advance a little further to the front. When the situation makes such an advance possible by daylight, it should be made during the day; but care must be taken by the infantry that they do not interfere with the fire of the artillery.

The infantry in the first line will then construct a strong line of entrenchments within 600 or 700 metres of the position, and, with the artillery, will prepare for the decisive battle. During this stage, a portion of the artillery, especially howitzers, should advance, under cover of night, to within about 2,000 metres of the enemy. When the infantry has been able to reach the above-mentioned line, they will be able to reconnoitre the enemy's in detail; and a clear idea as to what should be the next step to be taken by the attack may then be formed. It can then be decided whether an assault should be made immediately or whether the line occupied should be held on to longer. When

the enemy has machine guns, take one or two field guns, by night, to within 1,000 metres of them. They must be placed in well covered positions, from which they must try to destroy the machine guns.

### 5. *Decisive Battle.*

If it is considered necessary to hold on a little longer before assaulting, the infantry, using the greatest caution and under cover of night, should advance to within 300 or 400 metres of the enemy and construct, with the assistance of engineers, a line of very strong trenches (proportion of engineers to be one company to a regiment of infantry). When, however, a combined general advance and construction of the trench are impossible, smaller parties of infantry and engineers should be employed at night at a time, and thus endeavour gradually to carry out the movement.

When, however, nearer approach is still impossible, even when using small parties, the attack must then have recourse to sapping.

In either case the Artillery must bombard the enemy with high explosive shell, and must not change its targets until the effect of its fire has told.

The main targets for the artillery are field-works and batteries, while the fire of some guns must be directed against the sections of fire-trench connecting them. Experience in recent attacks against entrenched positions has taught us that, in the attack of a position held by a force of, say, one division, it is not until our artillery has materially crushed at least two of the enemy's works and two or three batteries in close connection with the former (which is the plan on which he always constructs his defensive works), that we can say that an opening for the assault has been in any way provided. The more the attack progresses the greater is the difficulty of ammunition supply, both for the infantry and artillery who are close up to the enemy. Under such conditions it can only be carried out under cover of night. Therefore, the best thing to do is to have as much ammunition as possible collected ready in the neighbourhood of the positions of the attacking troops.

When the infantry is able to occupy a position within 300 to 400 metres of the enemy, covered communication trenches leading to the rear should be constructed as soon as possible. At the same time, the engineers, with the assistance of the infantry, should seize every possible chance of destroying the enemy's obstacles.

The assault should be made simultaneously all along the line, against the field works, fire-trenches and batteries. The troops assaulting the works and fire-trench connecting them should be one battalion or more of infantry, with a few engineers, to each work and adjacent sections of fire-trench. Those directed against a field-work should carry entrenching tools, tools for destroying works, and a few ladders; while as many machine guns as possible should be carried by those who assault firing-trenches.

The remainder of the infantry not directly engaged in the assault should be kept under cover in the shelters which they will have constructed, ready to render assistance to the assaulting party. Troops in reserve should advance so as to prepare for emergencies. The Artillery, especially the guns firing on the enemy directly in front of the attack, should gradually increase the intensity of its fire as the period of the assault approaches until its firing becomes dangerous to our own

attacking troops. Then the main portion change their targets, and fire at the works and batteries on the flanks, while the remainder fire on the interior of the position so as to hinder the movements of the enemy's reserves. The neighbouring troops should also attack the enemy in their own front so as to keep his attention fixed, while the main attack is progressing.

The troops who assault the enemy's trenches should place machine guns in position as quickly as possible, when they have occupied the trenches, and so prepare to resist counter attack. Moreover, by so doing, they will be able to assist in the attack of the works on their flanks. Artillery should advance as far to the front as possible whenever opportunity occurs, and thus join in the attack.

The works on each flank must then be captured at all hazards, otherwise the troops who have succeeded in occupying the enemy's trenches between them, will receive a concentrated fire from three directions, and the retention of the trenches will become impossible, and the failure of the whole attack will ensue.

In a field battle between smaller bodies of troops, victories may not infrequently be won, by delivering an assault, taking advantage of some little weakness on the part of the enemy; but with big forces engaged, especially in semi-siege operations, an assault must not be delivered merely because a good chance of a trifling nature presents itself. At the same time, however, useless caution must be avoided. It, therefore, entirely depends upon commanding officers to judge, from past experience, whether they should take the opportunity offered or not.

### 6. *Movements at the Conclusion of a Successful Attack.*

When an attack has been brought to a successful and expected conclusion the adjacent trenches should be occupied so as to prolong the front; and, at the same time, the pursuit and further attack of the enemy should be pushed with the utmost vigour so as to ensure a complete victory. Fresh troops, therefore, should be kept in hand for pursuit and further attack.

### 7. *Conclusion.*

The following are the most important points to remember with regard to the attack of entrenched positions:

1. Not to be in a hurry in pushing an attack home unless obliged to do so by circumstances.
2. To carry out a careful and accurate reconnaissance of the enemy's position and situation.
3. To draw up an accurate and careful plan of operations.
4. To avoid useless expenditure of strength and ammunition.
5. To retain an ample reserve of men and ammunition for the final attack.

### Opinions of the Chief of Staff of the 4th Division.

The attack of an entrenched position has been looked on as a difficult task from time of old; and those we have encountered during this war have moreover been defended by strong forces of the enemy armed with modern fire-arms. Consequently no "field manœuvre" was of any use against them. When attacking such positions, an accurate and careful plan of operations must be drawn up, and carried out with

care and consideration. To hurry the conclusion of an attack or to advance carelessly is to court disaster. The details of a plan of attack must depend on the ground. But the following principles are applicable to the attack of an entrenched position after an advance through open, unprotected country, the ground being favourable to the assailant:—

1. Reconnaissance.
2. Artillery bombardment and advance of the infantry.
3. Advance to the attack.
4. The conduct of the assault.

1. *Reconnaissance.*

The general situation of the enemy's position will be known through reconnaissance and information supplied by the cavalry.

As regards further reconnaissance, the attacking army, after halting out of reach of the enemy's fire, should detach dismounted officer's patrols to find out the positions of his lines of trenches and his artillery positions. A decision as to the whereabouts of his entrenchments, etc., should be arrived at after a comparison of all reports collected from different sources. The general direction of advance should then be decided on. After this has been done, the infantry to form the first line should advance under cover of night to within about 1,000 metres of the enemy, while the artillery should take up a position within effective range. Both infantry and artillery will construct entrenchments for further operations. Troops in rear will also construct cover for themselves, and, if possible, with a view to future operations, dig communication trenches.

At early dawn the infantry will throw forward a line of skirmishers extended at wide intervals. Artillery patrols will accompany this line. At the same time the artillery will open fire. Thus both infantry skirmishers and the artillery, by its fire, will reconnoitre more in detail the enemy's position. When the artillery has discovered the enemy's position by means of its fire, it should cease firing, and, if possible, change its position. Sometimes it will be an advantage that a small force of artillery should be detached to a point, a good distance from its main body, to carry out the above object.

By such reconnaissances the situation of the enemy should be made generally much clearer and the point of attack may then be decided on. Then the real artillery fire should be opened.

2. *Artillery Bombardment and Advance of the Infantry.*

The artillery should fire mainly upon the enemy's artillery, to try and silence his guns. For this purpose enfilade and oblique fire should be used. For this purpose it will be an advantage if one officer of artillery be appointed to control the fire of the whole of the guns.

The expenditure of a great quantity of ammunition and labour must be expected before the enemy's guns can be silenced.

Therefore, the whole of the artillery should direct an overwhelming fire, in the first place, on the enemy's artillery; and afterwards, a part of it should direct its fire upon the enemy's infantry; and should be continued without an interval; sometimes the fire should be heavy and sometimes deliberate. When a portion of the artillery has turned its fire upon the enemy's infantry, the whole infantry line should advance in small groups by short rushes. This will be continued till

they arrive to within about 500 metres of the enemy, and there they will construct the second position for further operations and use. When all the above movements have been completed, it will probably be about sunset. By working at night the above-mentioned second position must then be made stronger. Creeping patrols should be detached to the front from this line for further detailed reconnaissance. The artillery will change its position and advance to the front under cover of darkness. The troops in rear will advance as near to the front line as possible during the night

If infantry and engineers are employed to dig trenches in front of the point of attack, it will undoubtedly reduce the losses of the assailants.

### 3. *Advance to the Attack.*

After the point of attack has been decided on, as a result of the reconnaissances carried out during the night, the artillery will then open fire at early dawn, the main body on the point of attack and a portion on the enemy's guns. The infantry will then advance to the attack.

The artillery fire and the infantry attack should not only be directed against the chosen point of attack, but also against the adjacent trenches on both sides of it; and every work on the flanks which protects the chosen point of attack should also be threatened simultaneously. When the infantry begins its advance, the co-operation of artillery is most important. When the infantry has arrived within assaulting distance, the main body of the artillery will change its objective and fire at the enemy's guns, while part of it will fire at the ground in rear of the enemy's entrenchments. While the above operations are in progress, the troops in rear should advance in widely extended formation, as far as the position which the first line has been occupying as their second position.

### 4. *The Conduct of the Assault.*

The destruction of obstacles is another hard task; but to push home an assault over them is a matter of impossibility. Assault made against a small open space between works may be successful to start with; but in the long run, retreat is unavoidable on account of the concentrated fire which the enemy will bring to bear from neighbouring works. Therefore, the best and most advantageous class of assault is that which is directed as a turning movement, against a work, on one of the enemy's flanks. The assailants' plan of attack should therefore be drawn up with this idea. Skirmishers extended in front of other parts of the position should hold their ground and concentrate their fire on the trenches in front of them, while those opposite the point of assault, should be reinforced by the troops in rear and should charge home against the enemy in their own front. When they have penetrated the enemy's line a portion of them should pursue and attack the retreating enemy and also prepare to receive the counter attacks of the troops coming from his rear. Another portion should, at the same time, surround the enemy's work so as to bring enfilade and reverse fire to bear on him; and, if possible, a third party should force its way inside the work by means of the communication trench at the gorge. A big national flag should be hoisted by the troops surrounding the work to prevent their comrades firing at them.

The opinions given above are derived from principles which hold

good during an attack on an entrenched position with the arms and material at present available.

It must be understood, however, that at least three days are necessary to carry out such an attack. When, however, all required descriptions of arms and material are procurable, siege operations should be carried out.

## OPINIONS OF THE CHIEF OF STAFF OF THE 6TH DIVISION.

*Contents.*

Introduction.
1. Occupation of the enemy's advanced position.
2. Reconnaissance.
3. Deployment.
4. Artillery bombardment.
5. Advance to decisive ranges.
6. Conduct of the firing at decisive ranges.
7. Advance to within assaulting distance.
8. Destruction of obstacles.
9. Conduct of assault.
Conclusion.

*Introduction.*

The attack of an entrenched position is not an easy task. The operation of approaching the enemy will be more difficult than ever after the "kou-liang" is cut. Moreover, for the following reasons our future procedure will differ from that hitherto employed:—

1. The days are becoming shorter, and consequently no decisive results can be expected from an attack in one day.
2. The danger of frost-bite in the coming winter will restrict movement.
3. The defensive value of hills, rivers, swamps, and marshes will be changed by winter.

The undermentioned opinions are based on the consideration of the existence of the above conditions when attacking an entrenched position.

1. *Occupation of the Enemy's Advanced Position.*

The enemy generally holds an advanced position. The occupation of the same must be the first step in the attack. This has not proved a hard task so far, and the same will be the case in future.

2. *Reconnaissance.*

The principles of reconnaissance do not differ from those we are taught before the war; but the effects produced by variations of ground and climate and by night operations must be borne in mind. Reconnaissance of the enemy's artillery positions should be as detailed as possible. For this purpose it may therefore be advisable to employ a certain number of guns.

Reconnaissance of this kind should be carried out in the evening of the day on which the enemy's advanced position is occupied. If one evening is not sufficient, it should be continued during the whole of the next day.

When, as the result of the above-mentioned reconnaissance, the plan of attack has been drawn up, the clearest possible orders, and

most suitable precautions to be taken should be issued to the troops so as to give them ample time to make the necessary preparations.

If the situation admits of it, the troops should be informed beforehand what line they will have to occupy at night; but care must be taken that the project does not become known to the enemy.

### 3. *Deployment.*

The infantry and artillery will advance under cover of night, and will occupy the positions previously decided on. Shelter trenches and epaulments will be constructed before dawn. The distance from the enemy of the above positions for infantry and artillery must be determined by the following considerations:—

Artillery must take up its position within 3,000 metres of the enemy's position, so as to commence firing at decisive ranges; movements by day under the eyes of the enemy are always dangerous. The infantry, after having advanced as near to the enemy's line as possible, say to within from 1,500 to 2,000 metres, will occupy its first position, under cover of a village or of low hills. If possible, however, it should advance still nearer, that is, to within decisive ranges, and construct an "attack position" there. If this can be done, the advantage gained will be beyond question.

### 4. *Artillery Bombardment.*

Though artillery will open fire at dawn, still, an overwhelming fire should not be commenced until the enemy's artillery positions have been accurately located and the fire has begun to take effect.

When the enemy's artillery fire begins to slacken, a portion of the artillery should direct its fire upon the enemy's infantry, so as to assist the infantry advance, while the remainder of the artillery continues firing at the enemy's guns.

High-explosive shell should be used by the heavy field guns for the purpose of destroying the enemy's earthworks, while the field howitzers search the interior of his works and trenches with shrapnel.

When ordinary field guns are employed for these latter purposes, the expenditure of ammunition will be very high.

Two or three guns must be brought up to within about 1,500 metres of the enemy's position and use percussion shell for the purpose of destroying the machine guns inside the works or for breaching obstacles.

When an advance of the infantry is in progress, an artillery commander should order a certain number of guns to follow closely behind the infantry line, to be used in emergencies. In many cases it proved to be a satisfactory arrangement for one or two artillery officers to be attached to the staff of an infantry commander for the purpose of ensuring sound co-operation between the artillery and infantry.

### 5. *Advance to Decisive Range.*

When it is possible to effect an advance to a position within decisive range under cover of night, the infantry of the attack will advance and occupy such a position in the face of all difficulties, and there construct works of defence.

When, however, it is impossible to do so, an advance should be made from the position of first deployment. This advance should be

commenced directly an opening presents itself, on account of the slackening of the enemy's artillery fire. The best method of carrying out such an advance is the method of rushes employed in the South African War. When the infantry arrive within from 400 to 600 metres of the enemy's line, they will raise effective cover (parapets, breastworks, etc.) to protect them from his fire.

When the enemy's resistance is stubborn during the rushes, the first group to rush forward should improvise raised cover from fire on each line it halts on. The second group, following the first in similar rushes, will stop and improve the cover raised by the first. The third group will improve it still more, and each successive group will act in the same way, until parallel lines of parapet have been constructed to be later connected by communication trenches.

Experience has taught us that the strength of a group of infantry told off to make a rush as above described should, in open ground, not exceed a sub-section in strength.[1]

### 6. *Conduct of the Firing at Decisive Ranges.*

When the infantry has occupied a position within decisive range, at every opportunity offered a heavy fire should be opened upon the enemy. In such firing, the artillery should join, for the destruction of the enemy's earthworks and obstacles. The fire should be heavy and rapid, and high-explosive shell should be used by the heavy field guns and howitzers. The artillery should also fire at the enemy's infantry appearing in the firing line, and at the men and horses in rear of the position.

The important points to consider after the occupation of the above-mentioned line are:—

1. The establishment of connection with other troops on each flank.
2. The reconnaissance of the point of assault.

It will be a great advantage if the line of "the position for decisive fire" be so chosen that an outflanking movement against the enemy's work selected as the object of attack can be carried out from it. But it must be admitted that as a rule there is nothing to be done but to deliver a frontal attack.

### 7. *The Advance to Within Assaulting Distance.*

It cannot be expected that the defeat of the enemy, or his retreat from his entrenchments, should be caused by the fire of the attacking infantry from the "position for decisive fire" or by the effect of the artillery fire delivered in co-operation with it. The moment when the enemy's infantry is obliged to keep their heads down in the trenches on account of the severe fire of the assailants' infantry and artillery is the very moment when the attacking infantry should sally forth from their "position for decisive fire." The question as to whether the attacking infantry should advance straight away to the assault or should halt once or twice on the way must be decided by the effect of the fire which is being delivered as mentioned. The seizure of the critical moment to sally out of the trenches and make this rush across the open depends entirely upon the rapid decision of the com-

[1] A sub-section (buntai) consists of from 4 to 8 files under a non-commissioned officer or Superior Soldier.

mander who is in charge of the attack, and the courage of his subordinate officers and men.

When it is impossible to make such a rush by day, it must be carried out at night, and the infantry must then advance to within 200 or 300 metres of the enemy and there construct a strong line of cover as a base for further advance. It will be of great assistance, and will facilitate the advance of the infantry from the "position for decisive fire" if a portion of the artillery advances to a position in front of the main line of guns and directs its fire on the enemy's entrenchments while the attacking infantry is making this advance to within 200 or 300 metres of the enemy's line.

8. *Destruction of Obstacles.*

Attacking troops are responsible for determining the description and extent of the obstacles laid down by the enemy, and the best methods of destroying them. The destruction of obstacles, by day, can only be effected with the assistance of neighbouring troops; but nine times out of ten this is impossible. It, therefore, becomes necessary that their destruction should be carried out at night. For this purpose the attacking infantry will advance as far as the line from which the night assault is to be carried out. From this line a few small parties of infantry and engineers will be sent forward for the purpose. For the destruction of wire-entanglements it will be quite sufficient if the wires and poles are cut.

9. *Conduct of the Assault.*

When enemy's resistance is stubborn, an attack is not brought to a successful conclusion by fire, but by the bayonet charge. If sufficient effect has been produced on the enemy by the intense fire from the "position for decisive fire," the assault may be delivered at once; but if he still preserves his power of resistance, a rush will be made from the "position for decisive fire" to within assaulting distance. Thence, a severe fire should again be opened upon the enemy and the assault will be delivered when a good opportunity presents itself. In a night assault there must be no firing; the bayonet only must be used. Don't assault on too broad a front. Several lines of infantry in closed formation should follow closely in rear of the first assaulting party.

*Conclusion.*

The following points are important to remember when carrying out an attack against a strongly entrenched position:—

1. Careful reconnaissance.
2. Sound preparation.
3. Complete plan of operations.
4. Accurate orders.
5. Unwavering execution of the plan of attack.
6. Take sufficient hours for an attack, even in winter when the days are short.
7. It will take at least two days and nights from the time the enemy's advanced position is occupied, before the final assault can be delivered.
8. The spade is necessary for infantry, even in the attack.
9. Protection from frost-bite.

In conclusion, I should like to say once more that thorough co-operation between infantry and artillery is of the utmost importance in carrying out the attack of an entrenched position.

# THE PASSAGE OF RIVERS BY SMALL BODIES OF MOUNTED TROOPS.

*By Captain E. N. MOZLEY, R.E.*

---

THE subject with which this essay deals is able to claim both the respect due to age and the charm of novelty. Rivers have had an influence on mankind perhaps unequalled by any other circumstance of our environment. Moreover, while they have proved a blessing to the arts of peace, they have often presented themselves as an additional foe in wartime. History is full of their importance in political and military operations. And of all the branches of warfare there are few which give a wider field for ingenuity and invention than does their passage. It is true that this is a minor art, used by generals and strategists who would as soon think of working out the details of a bakery wagon as of a flying bridge; but none the less, it is a very interesting subject for experiment, and one which has a special claim on the Cavalry Arm.

The writer's experience has been principally obtained during the camps of instruction for Cavalry Pioneers held at Christchurch in 1897-8-9, 1903, and 1904. In those years the mounted detachment (now field troop) R.E. and small parties of pioneers from half-a-dozen regiments spent two months under unusually favourable conditions. We were indeed fortunate in our surroundings. The Earl of Malmesbury and Sir George Meyrick, who alternately put their land at our disposal, were the best of hosts. Not only did they give us all camping facilities, but they practically put their forests at our disposal—an inestimable advantage for an engineering camp. Very many other kindnesses did the officers and soldiers experience at their hands, and few of those who visited Christchurch failed to bring away with them pleasant memories.

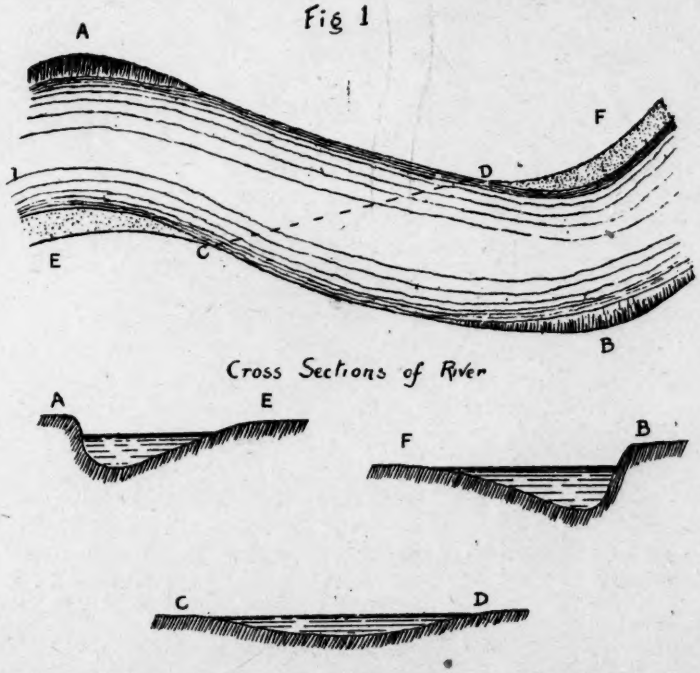
The present object is to record a certain amount of military engineering practice, of which an account will not be found elsewhere. Most of the experience related is original; in a few cases, however, other works on the subject have been referred to, notably that fine classic, Sir Howard Douglas's "Treatise on Military Bridging," a work which will repay study, and on which our modern text-book is founded.

Bridging has been explicitly excluded from the subject, both because that art is fully dealt with in the 3rd part of "Instruction in Military Engineering," and to a certain extent in the "Manual of Military Engineering"; and also because, under the conditions laid down in the title of this essay, bridging would rarely be employed. Rivers, worthy of the name require more material and time to bridge than would be available for small bodies of troops. It is, of course, impossible to define for what size

force and river it is economical to construct a bridge. Evidently one would not do so for an officer's patrol across the St. Lawrence; equally evidently rafting and ferrying would be too long a proceeding for an army corps across a 100-foot stream. Between these extremes circumstances would always define the best course to take; but in the case we are considering, *i.e.*, advanced or isolated cavalry work, a continuous bridge would rarely be built.

It is important to realise in making arrangements for crossing rivers, or indeed in doing any military engineering, that the text-book does not lay down every way in which the work may be done. It can only give examples, and this is all it professes to do. It is difficult to get soldiers to understand the importance of using any and every material that is to hand. For instance, the bridging text-book describes with great detail the use of hemp cordage, and the result

Fig 1

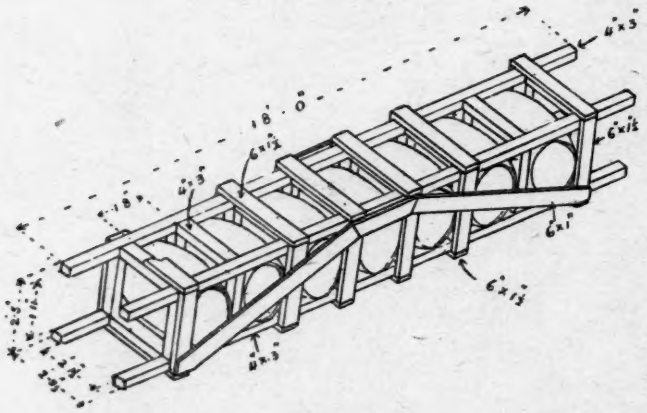



has been that non-commissioned officers sometimes come and say that they cannot get on with a bridge because there are no more lashings. This may be a reasonable enough complaint in a highly civilised country in peace time, where the seizure and use of anything that appears handy is sure to meet with a protest from its rightful owner. But even under such circumstances it is easy to train men to accept and make use of *material that is not so good but will have to do.* "Le *meilleur c'est l'ennemi du bien*" is a proverb which is never truer than when applied to practical soldiering. For instance, the country is perhaps full of wood, wire, and live stock. On service you might go far to find pontoons, ropes, and even barrels. Use what you have

got, therefore. Make your lashings of wire, your pontoons of logs, and your barrels of hides, and practice as much as possible with such materials in peace training.

What, then, are the possible ways of crossing a river? In the first place there may be a ford. The best way of finding a ford is by riding in until you find the shallow parts. If the river curves, the most likely place for a ford will be as in Fig. 1.[1] At A and B on that figure, *i.e.*, the concave banks, the water will be deeper. By missing these points we may strike a shallow part of the river obliquely as at C-D. Good approaches and landings should be looked for, especially on the far side. It is also advisable to have a supplementary *landing* place down stream. If the width is not prohibitive, ropes may be stretched each side of the ford to define it, and to prevent men from being washed down stream. Boats may also be posted down stream for this purpose. In countries where floods are common,

Fig 2




flood level should be ascertained, and, if tidal, the amount of rise of tide noted. In larger operations it may be necessary to have a post up stream to signal or telegraph warning of a flood. It is worth remembering that after a flood a river, formerly too muddy to cross, often becomes fordable, as the mud gets swept away.

If the river is not fordable it must be crossed by one of the three following methods:—(1) bridging, (2) rafts, (3) boats. In connection with (2) and (3), swimming horses will be necessary. The first method, viz., bridging, is outside the scope of this paper.

Some improvised methods of making rafts will now be described. Not all of them were successful. The experiments are essentially empirical, and must be guided more by practical experience than by the light of reason alone. The chief requisite in a raft is buoyancy; the second is navigability. The materials from which rafts can be made may be classed under three headings: (a) open vessels, *e.g.*,

[1] "Fig. 1 is taken from Part III.—I.M.E."

boats, pontoons, canoes, etc., (b) closed vessels, *e.g.*, barrels, boxes, or tins made waterproof or covered with waterproof materials, horse or cow hides, (c) material that has natural buoyancy of itself—generally timber. As regards (a), we have tried the following:—

*Camp Kettles.*—These, even with lids on, are a delusion and a snare (though if the lids were *sealed* on in some way they would probably serve to carry light loads).

Fig. 3.

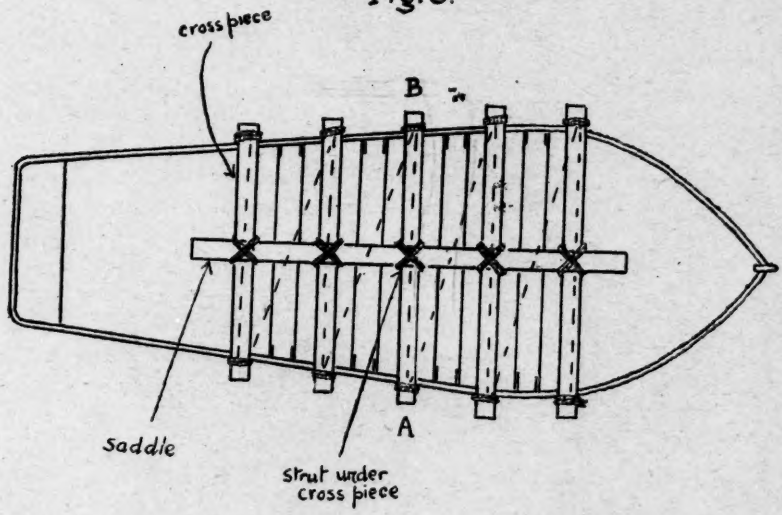
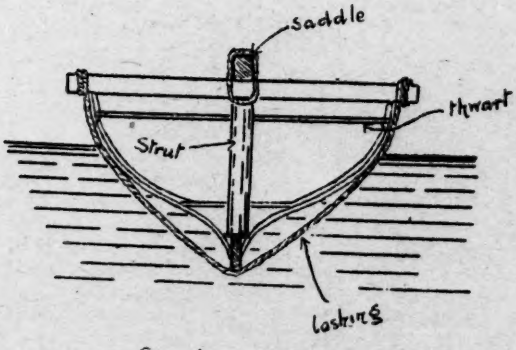


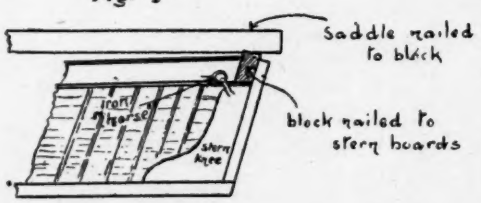

Fig. 3A.




Section on A.B

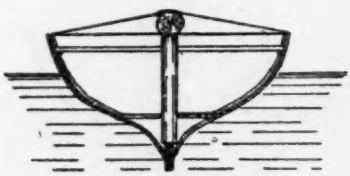
*Headless Barrels.*—These, if otherwise sound, are satisfactory. They must, of course, be built into a sort of wooden crate (as in Fig. 2), and such a crate, acting as one pier of a raft, must not be allowed to get loose by itself, or it will turn on its side and swamp. Two such crates must be secured together by cross pieces at the *top and bottom of the barrels.*

Fig. 4



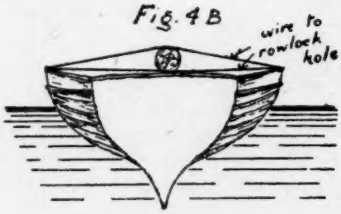

Longitudinal Section at Stern

Fig. 4A



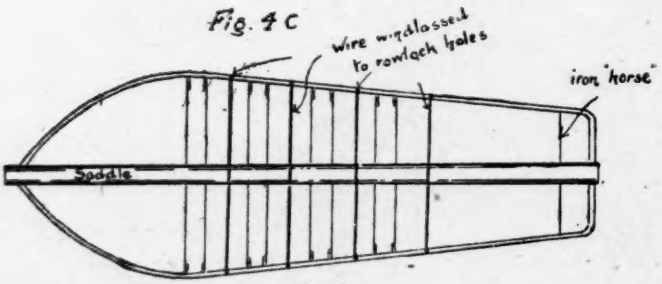
Centre Section.

Fig. 4B




Stern Elevation

Fig. 4C




Plan

*Metal drums*, which have contained oil or grease, are sometimes available; they would generally have their tops broken or torn, and would therefore have to be kept upright in the same way as has been described for headless casks.

Before leaving the subject of open vessels, a short account will be given of some methods tried in 1904, and found suitable for fitting

boats for rafting and bridging. The text-book gives so short an account of this that it is excusable to entrench on its province. It was found that there are three good ways of fitting a "saddle" to a boat, which is the problem to be solved, and Figures 3, 4, and 5 attempt to show this.

In Figure 3 and 3a, the saddlebeam is carried on cross pieces resting on both gunwales. The cross pieces are supported at their centres by props, resting either on the keel of the boat (and in such cases do not be content to rest them merely on the floor boards, but

Fig 5.

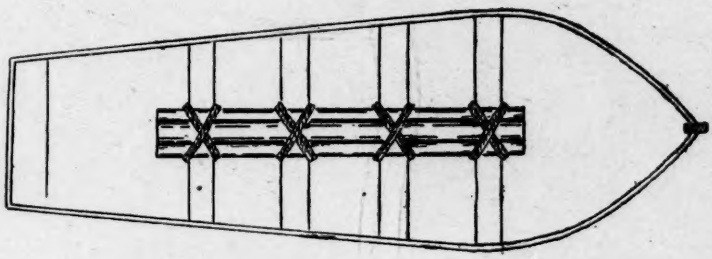
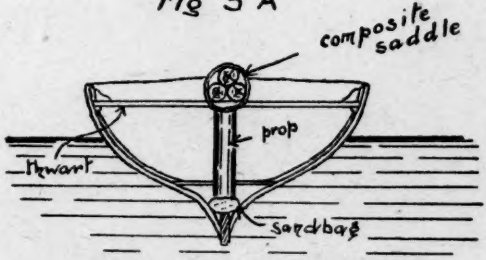


Fig 5 A




cut a hole in the boards and let the props rest right down on the top of the keel), or on the thwarts, centre-board, etc. Cleats should be nailed round the feet of the props to prevent them shifting. The crosspieces carrying the saddle are further secured by connecting the two ends of each crosspiece with a lashing passed round the bottom of the boat. The saddle should be nailed to the crosspieces, and the crosspieces to the props.

The second method, shown in Figure 4, 4a, 4b, and 4c, is for smaller boats, where the saddle—a pole or beam—extends from bow to stern, and rests on both. Props may be necessary as before (without crosspieces); the saddle should, if possible, be cut to fit some

prominence or recess at the bow and stern to prevent it shifting, and should also, for the same purpose, be wired strongly to the rowlock holes on each side, and the wires windlassed up.

Lastly, as Figure 5 and 5a for long boats of low freeboard, the saddle (composite if necessary) may rest directly on the several thwarts, which will have to be propped up under their centres, as described in the first case. Such props may rest on filled sandbags on the bottom boards or keel, which distribute the pressure. In all cases the top of the saddle must come above gunwale level to prevent the baulks hitting the gunwales when the water is rough.

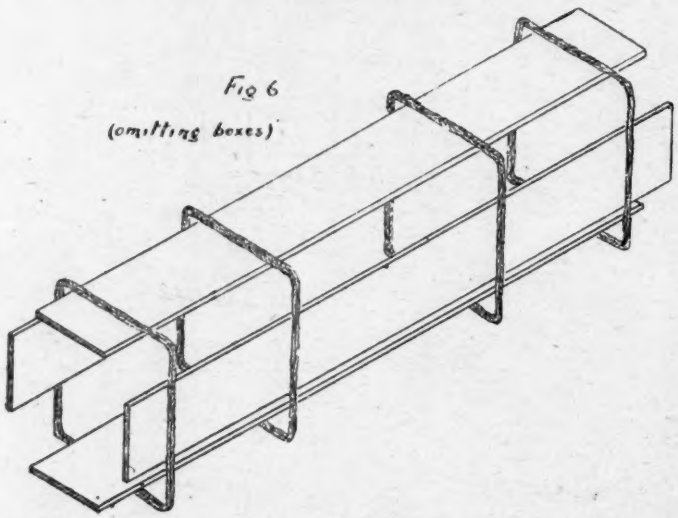


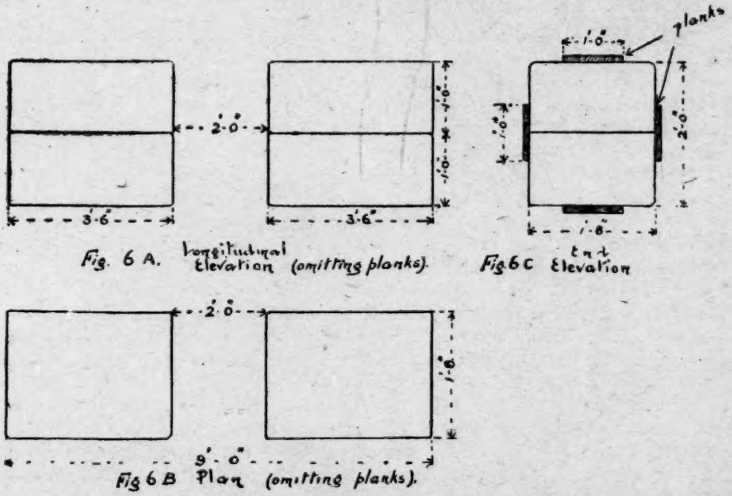
Fig 6
(omitting boxes)

As regards *b*, making rafts of barrels is exhaustively described in the Bridging Manual. For general use the method of building up barrels into crates with timber and nails is more worth practising than the sealed pattern method with ropes, though the latter is far more common for instructional purposes.[1] But there are many other kinds of closed vessels that can be used. *Biscuit tins* are generally available on service. If sound (*i.e.*, unpunctured), with tight-fitting lids, and considerable depth, they would prove very useful.

During the last two summers we carried out a lot of useful practice with a raft, which, though slow, proved quite navigable. It was made as follows:—4 wooden boxes (with lids), each about 3 feet 6 inches by 1 foot 8 inches by 12 inches, were placed in two pairs, one on the top of the other, as in Figures 6, 6a, 6b, and 6c. (These

[1] The usual method, beloved of drill-instructors, seems to have been an exception to the laws of evolution, by springing in its final and perfect form from the brain of some clever person at the end of the 18th century. Certainly no change of method has been recorded since that date.

boxes were those built to carry tools on the tool cart of a field company of engineers, but any kind would do.) The two pairs were placed in line lengthwise, with a clear interval of about 2 feet, and four planks were lashed connecting the tops, bottoms, and two sides of the pairs, as shown in the figure, thus making a sort of oblong frame, 9 feet by 2 feet by 1 foot 8 inches. This frame was then enveloped by a 600 gallon waterproof canvas trough, which is big enough to give a double thickness all round. The ends of the trough should meet on what will be the upper side of the frame when in water, so that the joint is exposed to a minimum leakage. The eyelet holes of the trough allow it to be tightly bound round the frame. The frame is one pier of the raft, which consists of two similar piers; a suitable superstructure of baulks and chesses connects the piers of the raft, as, of course, has to be done to all the rafts here described. It is unnecessary to give details of such a superstructure, as it would, of course, follow the lines of all such platforms, *i.e.*, it would consist




of beams or baulks lashed to saddles on the piers, planks or chesses on the baulks, and ribands fastened down across the ends of the planks to secure the whole together, and to prevent the load slipping off the raft. It might be advisable, except in the case of a raft used in the transporting of vehicles and animals, to have ribands on all four sides of the raft. The raft above described was rowed one mile (in still water) in 28 minutes by five men. Unloaded, it drew 10 inches of water.

In all such improvised rafts it is a good plan to divide the buoyancy space into several water-tight compartments. You will thus avoid having all your eggs in one basket, and if a bullet penetrates one compartment and causes a leak, the raft can still be worked. The raft of boxes referred to above could easily be built of planking and nails, the frame having several partitions, the joints of which should be well caulked or packed with red lead and tow, to make them watertight.

*(To be continued.)*

# WARS OF THE TURKS WITH THE GERMANS.

*By Lieut.-General F. H. TYRRELL, late Indian Army.*

---

Hört nur! Einst jugten wir Husaren
Den Feind nach Herzenslust;
Da schoss ein Hund von Janitscharen
Den Hauptman in die Brust.

---

## INTRODUCTION.

TO-DAY the German Kaiser, whose predecessors on the Imperial throne claimed to represent the Western Cæsars, appears as the friend and well-wisher of the Monarch whom the Orientals style the Kaisar of Rúm, or Cæsar of Rome, the inheritor of the titles and the realm of the Roman Emperors of the East by right of conquest. To-day Germany has annexed the *rôle* of Protector of Turkey and Defender of the integrity of the Ottoman Empire formerly played by Great Britain on the stage of European politics, and the Vazirs at the Sublime Porte and the Secretaries of Yildiz Kiosk look for advice and assistance to the Cabinet at Potsdam and the Bureaux of Berlin. German officers administer the Osmanli Army, and German commercial agents exploit the resources of Asia Minor. The military force of the Turkish Empire is to-day a weapon ready to the hand of the German Emperor, perhaps to be aimed at the threatening predominance of the Sclavonic races in the East of Europe; ready, at all events, for use as policy and occasion may dictate or require.

But in the Middle Ages the Alamán Kirali (German King) was the most redoubted enemy of the Sultan in Europe, and his subjects were the most stubborn and most successful opponents of the victorious Turk's westward march. During the sixteenth and seventeenth centuries the plains of Hungary were the battle-field of the opposing hosts of the Crescent and the Cross, and the alternate tide of victory and defeat rolled to and fro between the bastions of Vienna and the battlements of Belgrade. There are regiments of the German Army to-day whose earliest laurels were won under Prince Maximilian of Bavaria or Ludwig of Baden in Turkish wars, and whose bayonets crossed the scimitars of the Janissaries at Buda and Salankaman.

The struggle between Turk and Teuton for the mastery in Hungary is only one episode of the eternal strife between the princes and the peoples of Europe and Asia, between the rival religions and civilisations of the West and East. The hostile nations, influenced and impelled by diametrically opposing social and political systems and ideas, meet in the clash of battle through the ages along the confines of the two Continents, and the tide of success ebbs and flows between them with almost monotonous regularity. The dawn of history shows us the Greeks encamped under the walls of Troy, and later on they are found with difficulty defending the coasts of Europe against the fleets and armies of the Persian King. Two centuries pass and

Alexander the Great marches over prostrate Persia and reaches India, and the Greeks found a kingdom as far east as Bactria, in Central Asia. The Parthians again drive them back and dispute the frontier of the Euphrates with the legions of Rome. Asia Minor becomes the theatre of war between Byzantine Cæsars and Persian Sassanides till the Arab tribes issue from their native deserts to besiege Constantinople, and to revive the Semitic Empire of the Carthaginians on the shores of the Mediterranean Sea. The Europeans are driven out of Northern Africa, and are pursued across the Pyrenees. Another turn of the tide brings the Crusaders to Damascus and Damietta; the Moors, expelled from Sicily and Spain, hardly maintain themselves on the shores of the Barbary coast. Then the Mongols swarm from their homes on the confines of China and trample Russia and Poland under their horse-hoofs; the Osmanli Turks subjugate all South-Eastern Europe, and their victorious career is only arrested under the walls of Vienna. The tide turns once more, and brings the Germans to Belgrade, the French to Algiers, the British to Cairo, and the Russians to Samarkand; and for the last two hundred years it has flowed steadily eastwards. Nor was it ever turned back towards the setting sun until the Rising Sun showed itself on the Japanese banner over the walls of Mukden and above the shattered ramparts of Port Arthur.

The Turkish invasion of South-Eastern Europe was the last wave of the receding Mogul deluge. The political fabric of the Arabian Khalifat had been shattered to pieces by Changhiz Khan and his sons at the head of their Tartar hordes; and the scattered forces of Islam found a new focus and rallying point in the horse-tail standards of Kara Othman. A revival of the old fanatic faith once more animated the Mohammedan world, and all the concentrated energies of militant Islam were guided and directed by the ambition and the ability of its Turkish leaders. The Osmanlis firmly believed that Providence had entrusted to their hands the divine mission of converting the infidel world to the true Faith, and for a time their belief was confirmed and strengthened by their success. In the space of two hundred years they had over-run and annexed all the lands of Western Asia and Eastern Europe, from Baghdad to Belgrade, from the banks of the Tigris to those of the Save; the Roman Empire of the East, the Sclavonic kingdoms of Bulgaria, Servia, and Bosnia, the principalities of Greece and Albania had all become the prey and spoil of their thronging squadrons, marching incessantly from conquest to conquest. "The Historie of the Turkes being," in the words of Knolles, "none other than that of the woefull Ruine of the greater part of the Christian Commonwealthe."

The Germans had gained experience of Oriental warfare and of Turkish tactics in the Crusades, in which more than one Emperor and many princes of Germany had taken part. The Teutonic knights had shared with the Poles and the Hungarians the disasters of the field of Liegnitz, when Batu Khan's Moguls had filled nine sacks with the right ears of the slain Christians. German knights and men-at-arms had fought in the heterogeneous armies of Crusaders overthrown by Bajazet at Nicopolis, and by Murad II. at Varna; but the religious question dominated political combinations in those times, and all effective co-operation between the West and the East of Europe to check the progress of the Turk was rendered impossible by the schism between the Latin and Greek churches. And in after times, when the tide of conquest had again turned, this religious divergence was always a

heavy drag on the eastward progress of Germany. Not until the rise of Russia did the Christians of the Balkan Peninsula hail a Protector and Deliverer of their own Faith. The Pole, the Hungarian, and the Austrian always stipulated for religious conformity as the price of their assistance; and the chiefs and captains of Bosnia preferred embracing the faith of the Prophet to submission to the claims of the Pope. But it was now the turn of the Latins to be attacked, and the Turks moved on from the conquest of Servia and Bosnia to that of Hungary. Belgrade had been held by the Hungarians as the frontier fortress of Christendom, and the conquering Sultans, Murad II. and Muhammad II., were both repulsed from its walls. But in 1520 it was captured by the young Sultan Suliman the Magnificent, and the way into Hungary lay open to the Turkish Army. For some time the doomed nation had a respite; the Sultan was employing his forces in maritime wars, and was busy expelling the Knights of St. John from their island fortress of Rhodes. That feat accomplished, he resumed his designs on Hungary, and in 1526 invaded that country with an army of 200,000 men. The Hungarians in vain called on the Emperor of Germany to help them; he had his hands full with the French foe on the west. The young King Lewis of Hungary took up a position at Mohacz to intercept the march of the Turks on Buda. He had only 25,000 men with him, but he expected a strong reinforcement from Transylvania under Prince John Zapolya, which never arrived, and Zapolya's subsequent conduct lends support to the charge of treachery levelled against him. The King drew up his little army with its left resting on the Danube and its right on his entrenched camp. The first charge of the Turks decided the battle, all resistance being crushed by their overwhelming numbers. The King and all his nobles perished on the field or in the flight, and few escaped from the carnage.

"This woefull battle," says Knolles, "not sufficiently to be lamented as the ground of all the miseries of that worthy Kingdom, was fought on the 29th day of August, in the yeare 1526."

After the battle, Zapolya made his submission to the Sultan, and was rewarded with the investiture of the tributary kingdom of Hungary. The Sultan marched on Buda and occupied the city without opposition. The surviving bishops and magnates of Hungary took counsel together, and offered the Crown to the Archduke Ferdinand of Austria, brother to the Emperor Charles V. He accepted it, and immediately began to take steps to make good his claim. The Sultan had withdrawn with his army into winter quarters, as was the invariable custom of the Turks, and so in the spring of next year Ferdinand sent a German army into Hungary, which expelled Zapolya, and placed a German garrison in Buda-Pesth. Suliman was furious when he heard of this, and he ordered his forces to rendezvous at Adrianople the next spring with the purpose of expelling the Germans from Hungary.

At this time the Ottoman Empire was the greatest military Power in the world. It occupied on the south-eastern verge of civilised Europe the same commanding position which is to-day occupied by the great military force of the Russian Empire on the north-east. The Turkish nation and army were synonymous terms, and the State was organised entirely for war, the civil administration being completely subservient to the military. The Sultan was the Commander-in-Chief; on his accession he was ceremoniously girt with the sword of Kara Othman, and was solemnly enrolled as a private soldier in the First Bulúk (company) of the Corps of Janissaries; the Grand Vazir was his Lieutenant

and War Minister. Every Mussulman subject of the Empire had his place in the ranks of the armed nation. The organisation of the forces was superior to anything that Europe could show at that time, and their numerical strength was more than double that of the forces at the disposal of the Emperor of Germany, even when he could draw upon the resources of Spain and the Low Countries. The Turkish Army was divided into two categories: the Kápi Kuli (Slaves of the Porte), or Regular troops, and the Sarhad Kuli (Slaves of the Frontiers), or Irregular troops. The first category comprised six corps of cavalry, Sipáhis, Silahdárs, two of Ulúfaji (Soldati), and two of Ghurabá (foreigners), two hundred companies of Janissaries (infantry), about fifty companies of Topjis (gunners) and Jebejis (ordnance store corps), a corps of Top-arábajis (artillery train), and thirty or forty companies of recruits called Ajam Oghlans (foreign boys), who were the human tribute levied quinquennially from all the Christian families of the Empire. These boys, taken at the age of from ten to fifteen, were forcibly converted to Islamism and trained as soldiers, and were subsequently drafted into the Janissaries and the other corps of the Standing Army. All these Regular troops were regularly paid, rationed, clothed, and lodged by the State, were governed by a military code, and had fixed establishments of officers and systems of promotion and superannuation. Many of the customs afterwards observed in the Standing Armies of Europe were in force in the corps of Janissaries, and perhaps were copied from them. In the time of Sultan Suliman the Magnificent, the total number of these paid or Regular troops amounted to something under 40,000 men.

The second category of Sarhad Kuli comprised the Provincial Militia, which formed the bulk of the military forces of the Empire. All the lands of the Ottoman conquests were parcelled out into military fiefs charged with the maintenance of the Turkish horsemen. These fiefs were of three classes: the Sanják (Standard), which maintained at least a hundred horsemen, the Ziámat, which supported from twenty to fifty, and the Timar, which had three to five. Each province of the Empire was governed by a Beglerbeg, who was Captain-General of the Militia as well as Civil and Military Governor, and in whose office rolls and registers of all the fiefs were kept. The provinces were divided into Sanjáks, or military districts, each governed by a Sanják Bey, who had a standard of a single horse-tail.[1] The Mussulmans who had no fiefs, and who were too poor to serve on horse-back, were enrolled as Azabs (Irregular Infantry), and served on foot, being employed chiefly as pioneers and escorts for baggage and munitions. They received pay only for such time as they were actually under arms, and at a rate much inferior to that of the Regular troops.

In the islands of the Levant, which were the province of the Capitan Pasha, they were enrolled as Levends or Marines, and this was the only corps in which Christians were allowed to serve.

Mussulmans who had a horse but no fief served as Akinji (foragers); they received no pay and subsisted only by plunder. They were

[1] These so-called Horse-Tails were really the Tails of the Yak or *Bos Grumiens* of Central Asia, used as emblems of authority also by the Moguls in India. The Sultan had seven Tails on his standard, the Grand Vazir five, and each Beglerbeg three. Many of these horse-tail standards may be seen in the military museums in Germany, where they are kept with other trophies taken in the Turkish wars.

called Sackmen by the Germans, from the sack which they carried to receive their booty.

The Sultan's military household comprised several troops of horse and companies of foot guards, but these were always retained about his person or palace, and were seldom actually employed in the fighting line. The Vazirs and Pashas also employed bodies of troops, paid out of provincial revenues, for their escorts and for the police of their districts, and as a counter-balance to the menacing power of the Regular soldiery, who already displayed a disposition to take the reins of authority into their own hands. These provincial-paid troops of horse were called Delis (Braves), distinguished by a high cap, or Gunalis (Hussars), who wore a dress like the Hungarians. Those of foot were called Sagbans (Dog-keepers), for hunting and warfare were intimately associated in the Turkish national mind, and many of the titles of the officers of the Janissaries were reminiscent of the sports of the field.

In arms and equipment, as well as in discipline and organisation, the Turkish Army was superior to the European Armies of the sixteenth century, except perhaps to the Spanish Standing Army of Charles V. The Turkish horsemen were, as Knolles puts it, "much pestered with arms," carrying a lance, a sabre, a yataghan, a mace or battle-axe, and a bow and arrows; the latter and the lance were later exchanged for a musket and a pair of pistols. They were not encumbered with defensive armour, like their German antagonists; the steel skull-cap and chain mail hauberk were worn by the Turks more for show than for use.

"The Turk's horsemen are all naked men" (*i.e.*, unarmoured), writes the historian Knolles, disparagingly. But in this, as in their method of fighting in open order, the Turks were in advance of their time. Already all the Janissaries were armed with the arquebus or caliver, the pike being entirely laid aside, while three-fourths of the German infantry were pikemen to one-fourth arquebusiers. The Turkish artillery was superior in calibre, both in field and siege guns, to anything in the European Armies, and it was served by a corps of Regular soldiers and a military train, the like of which was not seen in any European Army until the latter half of the seventeenth century.

The Turkish order of battle was usually the old Mogul division of the Army into five bodies, viz.: Advanced guard (cavalry), main body (infantry and guns), right and left wings (cavalry), and rear guard (mixed). They commenced the action by cannonading and skirmishing to annoy and confuse the enemy; then the cavalry attacked in swarms, and the Janissaries in dense columns, sword in hand. The guns were linked together by chains to prevent the enemy's cavalry from penetrating the battery, like the guns of the Moguls in India, as we learn from Bernier's description of the battle between Dara and Aurangzib. It was this chain which Shah Ismail Saffavi, the hero who revived the Persian Monarchy, is said to have severed with a blow of his battle-axe at Chaldiran, where his brave Kizilbash horsemen were dismayed and put to flight by "the cruell, cowardly, and murthering artillery of the Turkes" under Sultan Selim the Ferocious.

Above all, the Turkish troops surpassed their German antagonists in rapidity of movement. Being unencumbered with armour and plentifully provided with pack animals, they marched with a celerity which was most astonishing and disconcerting to their enemies. Their strategy being always offensive, they lived on the country they passed

through; their campaigns were, indeed, raids on a large scale, and the acquisition of slaves and booty was their object as much as permanent conquest. The spoiling of the infidel was a pious as well as a profitable duty. "Our troops spread themselves over the country," says the Turkish chronicler, Avliya Effendi, "taking booty day and night in the ways of God." Their Army was always, like those of India, attended by a camp bazaar, where a crowd of sutlers supplied the necessities of the soldiers and purchased from them their captives and plunder.

War was the business of the Turk's life, and the favourite proverb: "Al Harakat Barakat" (Restlessness is Blessedness) expressed the national spirit. Each spring the Sultan was expected, and seldom failed, to put himself at the head of the Army for the annual summer campaign. His pavilion was set up at the general rendezvous (usually Adrianople when the campaign was a European one), with the standard of seven horse-tails pitched in front of it, indicating the direction of the march. On the order for mobilisation, each Pasha or Sanják Bey mustered the fighting men of his district at his own headquarters, and marched them to the provincial rendezvous. Here they were mustered and inspected by the Beglerbeg, and were formed into Bulúks (companies) and Alái (regiments), and officers and commanders appointed for the campaign. The Beglerbeg thus led his forces to the general rendezvous, or to some convenient place for joining the Grand Army on its forward march. Little order or discipline was observed until the frontier of the enemy's country was reached, when the different corps and commands were assembled, and a written order of march published. An advanced guard of some five or six thousand horse was told off, and a rear guard of one thousand; in a retirement these numbers were reversed. All orders were issued in writing and conveyed by the Sultan's chaúshes or sergeants-at-arms, who had also the task of marshalling the troops on the march and for the battle. If the Sultan were not present in person, the Army was commanded by the Grand Vazir, and in his absence by a Pasha nominated as Seraskier, or Commander-in-Chief.

In Europe the art of war was passing through a period of transition; the invention of gunpowder had revolutionised tactics and transferred the principal *rôle* on the stage of battle from the cavalry to the infantry. The arquebus shot that laid the chivalrous Bayard low had sounded the knell of the feudal system of warfare, and the knights and men-at-arms and their retainers were being replaced by mercenary bands of professional soldiers. Spain was as yet the only country that possessed a Royal Standing Army. France and Austria had only started the nucleus of such an organisation in some companies of Royal Guards. The Army of the German Empire was made up of contingents from the different Electorates and minor States; but the Emperors relied more on the services of mercenary bands, often composed of Italians, Croats, and Walloons. But when Charles V. was Emperor of Germany he was able to rely on the services of his Spanish Standing Army, then the most formidable military force in Europe. The mercenaries were always more solicitous for their own interests than for the cause in which they were engaged, and were often mutinous and ready to turn their arms against their employer when they considered him to be either too exacting or too parsimonious. The company was still the unit of the organisation, but in some instances already companies had been assembled into regiments. Each

company comprised pikemen, musketeers, and sometimes also halberdiers, but the three were separated for tactical purposes. The cavalry were heavily armed and slow of movement. The artillery and engineers were considered as civil departments of the military service. The soldiers were attracted more by the prospects of plunder than of pay, for the private property of an enemy was still looked upon as a lawful prize, and knights and nobles made prisoners of war were still held to ransom. Discipline was lax, in spite of a military code of barbarous severity.

## The First War.

The first war between the Turks and the Germans was waged for the possession of Hungary, and ended in the division of that unhappy kingdom between the two contending foes. It lasted for forty years with short intervals of truce, when the Sultan was too busy with Persian or Mediterranean warfare to bestow much attention upon affairs in Hungary. The Turks considered themselves to be in a state of perpetual war with all Christian nations, and never concluded a permanent peace with any of them, but only a truce for a specified time, at the end of which the war was to be renewed.

Sultan Suliman gave orders for the assembly of the Grand Army in the great plain of Filiba (Philippopolis) in the spring of 1528, but torrential rains swelling the rivers and flooding the country made military operations difficult if not impossible, and he postponed his expedition to the following year. On the 13th April, 1529, he left Constantinople to put himself at the head of an army of 200,000 men, with which he entered Hungary and marched on Buda. On the field of Mohacz he was joined by Zapolya, who came with 6,000 Hungarians to do homage to the Sultan and to follow in his train. There was no army in the field to oppose them, and the German garrison of Buda consisted only of 1,000 men.

The Turks, without troubling themselves to breach the walls, made preparations for assaulting the town, upon which the garrison retired into the citadel. Despairing of holding out against so mighty a force, and having no hope of succour, the soldiers clamoured for a surrender; but the Governor, Count Nadasky, was resolved to hold out as long as possible, in order to give the Archduke time to make his preparations for defending Austria against the Turks. The soldiers thereupon threw the Governor into prison, and deputed two of their captains to treat with the besiegers. Terms of capitulation were arranged, the garrison being allowed to depart free and uninjured. But as they filed out of the gates of the fortress between the ranks of the Janissaries, who were drawn up ready to occupy it, the latter, disappointed of the plunder which would have been theirs after a successful assault, heaped abuse and insults upon them, and reviled them as cowards who dared not abide the shock of steel. A German soldier, losing patience, felled a Janissary to the ground: his comrades immediately fell upon the Germans, and massacred the whole garrison, only about sixty escaping with their lives. The Sultan deplored this flagrant breach of good faith and military discipline: he treated Nadasky kindly, commended his fidelity, and released him on parole. But he did not venture to punish his Janissaries for their misconduct, of which many examples will recur in the story of these wars. 'For why," as the historian Knolles observes, "the auncient character of

these martiall men is not now as it formerly was when they were with a more severe discipline governed; but now, being grown proude and lazie, as is the manner of men living in continuall pay, they with armes in their hands doubt not to do whatsoever unto themselves seemeth best, be it never so foule or unreasonable."

The Sultan installed Zapolya as tributary king of Hungary in Buda-Pesth, and set out with his army for Vienna, to make an end, once and for all, of Ferdinand's claims to the Hungarian throne. His march was preceded by 30,000 "Sackmen" (irregular horse), who spread themselves over the country for an enormous distance in front and on both flanks, sacking and burning towns and villages, and devastating and destroying everything that they could reach. "Contemporary writers have exhausted their powers of language in describing the atrocities perpetrated by these marauders. We find, for example, in a rare pamphlet of the time ('The Besieging of the City of Vienna in Austria by the Cruel Tyrant and Destroyer of Christendom, the Turkish Emperor, as it Lately Befell in the Month of September, 1529'), the following:—At which time did the Sackman spread himself on every side, going before the Turkish Army, destroying and burning everything, and carrying off into captivity much people, men and women, and even the children, of whom many they grievously maimed, and, as Turkish prisoners have declared, over 30,000 persons were by them carried off, and as has since been told, such as could not march were cruelly put to death. Thus have they wasted, destroyed, burnt, and plundered all in the land of Austria, below Ens, and nearly to the waters of Ens, but on the hither side of the Danube for the most part the land has escaped, for by reason of the river the Turk could do there but little harm; the towns also round about Vienna beyond Brück on the Leitha have remained unconquered and unwasted by the Turk, but the open country wasted and burnt."

Another contemporary writer, Peter Stern von Labach, describes the Turkish atrocities in the following words:—"After the taking of Brück on the Leitha and the castle of Trautmannsdorf, the Sackman, and those who went before him, people who have no regular pay, but live by plunder and spoil, to the number of 40,000, spread themselves far and wide over the country, as far as the Ens and into Styria, burning and slaying. Many thousands of people were murdered, or maltreated and dragged into slavery. Children were cut out of their mothers' wombs and stuck on pikes; young women abused to death and their corpses left on the highway; God rest their souls, and grant vengeance on the bloodhounds who committed this evil."[1]

The inhabitants of Vienna were expelled from the city by the military commanders to economise the provisions during the siege; and 5,000 of these unfortunate people were overtaken and massacred by the Sackmen. Some found refuge in castles, which the Turks could not reduce for want of artillery. The German garrisons, which Ferdinand had placed in the fortified towns of Hungary, abandoned their posts at the approach of the Turks and retired upon Vienna. These with other troops, collected for the defence of the city, amounted to 2,000 horse and 20,000 foot; besides whom there were 1,000 armed burghers.

[1] "The Two Sieges of Vienna by the Turks," from the German of Karl August Schimmer and other sources. London: John Murray. 1847.

Ferdinand made urgent appeals to the other German Princes for aid, but all they could promise him was a total force of 4,000 horse and 12,000 foot, and these were too late to reach Vienna before it was surrounded by the Turkish host. The city was defended by the Pfalzgraf Philip, who reached the city at the head of a small body of Spanish and German soldiers just before its total investment, and by Nicholas Count Salm, a veteran of seventy years, who had crossed swords with Francis the First at the battle of Pavia. He really exercised the chief command, the Pfalzgraf, though of superior rank, wisely deferring to his skill and experience. The city was put in as good a posture of defence as possible; the pavements were taken up to deaden the effect of the besieger's shot; and all the buildings of the suburbs outside the walls were destroyed. Their ruins, however, furnished a convenient lodgment for the Turks, who appeared before the walls on the 26th September. For three weeks the city was closely invested, and desperately assaulted. Suliman summoned the Governor to surrender, using fearful threats in case his terms should be refused; as he had previously boasted that he would soon take his breakfast in Vienna, the Christian commanders jeeringly answered him that his breakfast was getting cold.

All communications between besiegers and besieged were made in writing in the Italian language, and conveyed by released prisoners. The Turks shot vollies of arrows into the city, which literally darkened the air, and kept up a continual dropping fire of these missiles, so that it was dangerous for anyone to cross the streets.

(*To be continued.*)

# NAVAL NOTES.

**Home.** The following are the principal appointments which have been made:—

Captains—G. C. Cayley, to "Leander"; J. S. Luard, to "Blake"; T. W. Napier, M.V.O., to "Espiegle" and command of R.N. College, Dartmouth; H. Chatterton, to "Thetis"; W. E. Goodenough, to "Albemarle"; A. D. Ricardo, to "Russell." Commander—F. S. Litchfield, to "Sphynx."

*Royal Review of Home Fleet.*—On the afternoon of Saturday, the 3rd inst., His Majesty reviewed the newly constituted Home Fleet, which was moored in three principal lines from Cowes eastward down the Solent, with the destroyer and submarine flotillas anchored on both sides of the main fleet (see accompanying chart). The total number of vessels present of all classes was 174, viz.: 11 battle-ships, 11 first-class armoured cruisers, 6 first-class protected cruisers, 7 second-class cruisers, 1 third-class cruiser, 8 scouts, 10 torpedo-gunboats, 98 destroyers, 15 submarines with their two parent-ships, one mine-laying ship, and four special service vessels.

The fleet was composed of the following more important vessels:—

Battle-ships—"Dreadnought" (flagship of Vice-Admiral Sir F. C. B. Bridgeman, K.C.V.O., Commander-in-Chief), "Goliath," "Majestic," "Prince George" (flagship of Rear-Admiral P. Login, C.V.O., commanding Portsmouth Division), "London," "Victorious," "Bulwark" (flagship of Rear-Admiral F. Finnis, C.V.O., commanding Nore Division), "Canopus," "Magnificent," "Mars," "Hannibal."

First-class Armoured Cruisers—"Leviathan" (flagship of Rear-Admiral Callaghan, C.V.O., C.B., Commanding Fifth Cruiser Squadron), "Duke of Edinburgh," "Warrior," "Natal," "Cochrane," "Donegal," "Cornwall," "Cressy," "Carnarvon," "Essex," "Berwick."

First-class Protected Cruisers—"Niobe" (flying flag of Rear-Admiral H. S. F. Niblett, C.V.O., commanding Devonport Division), "Diadem," "Andromeda," "Amphitrite," "Ariadne," "Spartiate."

Third-class Cruiser—"Sapphire" (flagship of Rear-Admiral R. A. J. Montgomerie, C.V.O., C.B., C.M.G., commanding destroyer and submarine flotillas).

Scouts—"Attentive" (flying broad pennant of Commodore L. Bayly, C.V.O., in charge of destroyers in full commission), "Adventure," "Skirmisher," "Patrol," "Forward," "Foresight," "Pathfinder," "Sentinel."

Torpedo-Gunboats—"Dryad," "Jason," "Circe," "Speedy," "Speedwell," "Hazard," "Spanker," "Seagull," "Sharpshooter," "Harrier."

Depôt Ships for Destroyers—"Leander," "Hecla," "Tyne," "Aquarius" (distilling vessel).

Parent Ships for Submarines—"Bonaventure," "Forth."

Mine-Laying Ship—"Iphigenia."

Destroyers—98.

Submarines—15.

**Home.** In addition there was also present a Swedish Squadron of four ships, under the command of Rear Admiral C. Olsen, which was composed as follows :—

Coast-defence Battle-ships—"Oscar II." (flagship), "Thor," "Tapperheten."

First-class Gunboat—"Ornen."

To show how great the advance which has been made in the last twenty years, we may recall that at the Jubilee Review of 1887, there were 128 pennants present, of which 16 were battle-ships, but of these battle-ships only three were armed with breech-loading guns, and there were scarcely two ships alike. In cruisers the fleet was lamentably deficient, there being only present two armoured, four second-class and three third-class of this type of vessel; there was a considerable force of torpedo-boats, but the destroyer was as yet in the womb of the future.

Two years later the Naval Defence Act of 1889 was passed, and its results were seen in the fine fleet assembled for the Diamond Jubilee Review at Spithead on the 26th July, 1897. Instead of the heterogenous collection of vessels of ten years previously, the fleet was composed of 15 first-class battle-ships, 11 of which formed a practically homogeneous squadron, composed as it was of 6 vessels of the new "Majestic" class, with four of the "Royal Sovereign's" and the "Renown," to which were joined three of the "Admiral's" and the "Sans Pareil," with six other second-class battle-ships, one of which was the "Inflexible," which had flown the flag of the Commander-in-Chief at Portsmouth, the late Admiral Sir G. Willes, at the Review in 1887. As noteworthy as the change in the battle-ship force was the fine array of cruisers, which comprised no less than 12 first-class cruisers, all of a most powerful type for that day, including the then new "Powerful" and "Terrible," and 24 second-class cruisers, all, comparatively speaking, new ships, with a speed of 19 knots, three of a somewhat older class, and five of the newly-completed 20-knot third-class cruiser of the "Pilorus" type. There must be added 21 first-class torpedo-gunboats, 31 destroyers, and 20 first-class torpedo-boats, making a grand total of 136 vessels.

At the Coronation Review, held by His Majesty on the 16th August, 1902, there were present 21 battle-ships, 24 cruisers, 15 torpedo-gunboats, 32 destroyers, 5 training ships, and 7 brigs, making a total of 104 pennants exclusive of yachts and some special-service vessels.

The second-class cruiser "Juno," attached to the Channel Fleet, paid off at Chatham on the 15th ult., and recommissioned on the following day for a further term of service in the Fleet.

---

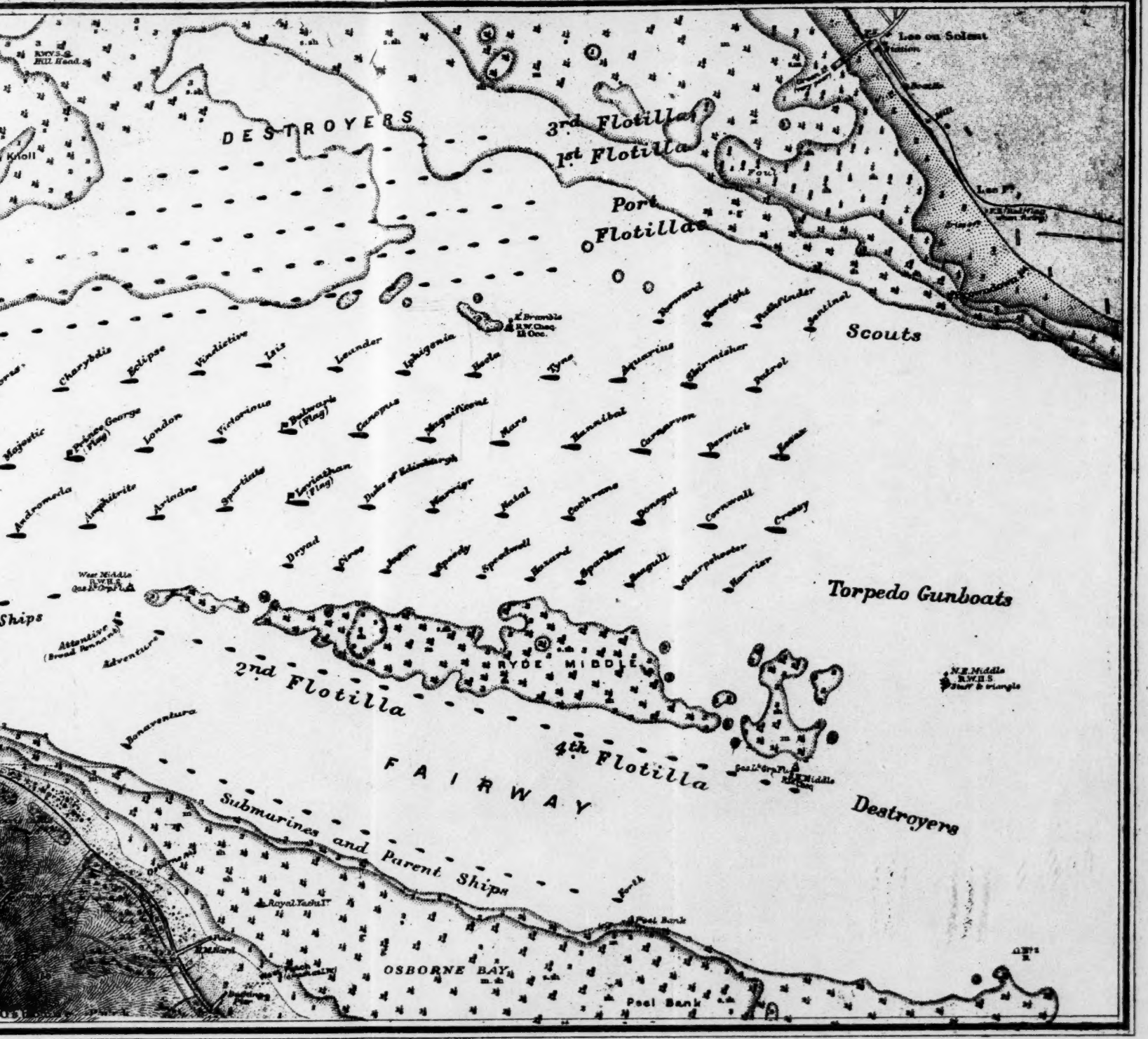
*Naval Expenditure.*—A return of the naval expenditure of each of the principal naval Powers, showing their total estimated naval expenditure in each of the last ten years, their expenditure in each of the years named on new construction, and the amount of their new construction in each of those years expressed in tonnage has been issued as a Parliamentary paper [310]. The return relates to the expenditure, &c., of Great Britain, France, Russia, Germany, Italy, and the United States, but "details as to Japanese expenditure, &c., are not available." The amounts shown in the return are those voted, as the sums actually expended are not ascertainable in all cases. The tonnage shown is that of vessels launched during each of the years named, when those vessels were completed. To effect a comparison between the naval expenditure of this country and of other naval Powers it will be necessary to eliminate from the total naval expenditure under Great Britain the expenditure

J. J. K. & Co., Limited, London.

Cables 10 5 0

# CHORAGE OF THE HOME FLEET AUGUST 1907.






REPRODUCED FROM ADMIRALTY CHART.

**Home.** relating to pensions, Coastguard, Reserves, and steam-ship subsidies, as there are no votes for these services in the foreign naval estimates excepting France and Italy. Some pensions for flag officers appear in the French estimates, and a vote corresponding to that for steam-ship subsidies in the British Estimates is included in the Italian vote for the mercantile marine. Two appendices are supplied, one showing certain expenditure provided for in the British Estimates, but not in foreign estimates, the other showing certain expenditure provided for in French, Russian, German, and Italian estimates, but not in the British. The amount of new construction in Great Britain for 1905-6 is estimated in the return at 105,360 tons, and the aggregate for all the other Powers in the return at 174,288 tons. Of this amount, the United States contributes 74,000 tons, Germany 33,936 tons, and France 31,381. During the last three years Great Britain has put afloat vessels aggregating in completed displacement 346,465 tons, while the United States in the same period has launched ships of 219,356 tons, Germany 142,348 tons, France 107,841 tons, Russia 70,554 tons, and Italy 40,353 tons.

*Ships in Commission since 1882 and Number of Groundings.*—The number of his Majesty's ships exercised at sea in the years 1905 (excluding manœuvres) and 1906 (including manœuvres) was greater than in previous years. The number of groundings has steadily decreased since 1882, as shown by the attached table :—

| Year. | Number of Ships in Commission. | | Total Number of Groundings. | Percentage of Groundings to Number of Ships. | |
|---|---|---|---|---|---|
| | Excluding Manœuvres. | Including Manœuvres. | | Excluding Manœuvres. | Including Manœuvres. |
| 1882 | 210 | — | 44 | 21·0 | — |
| 1883 | 208 | — | 41 | 19·7 | — |
| 1884 | 210 | — | 49 | 23·3 | — |
| 1885 | 217 | — | 41 | 18·9 | — |
| 1886 | 221 | — | 40 | 18·1 | — |
| 1887 | 222 | 265 | 47 | 21·2 | 17·7 |
| 1888 | 228 | 257 | 35 | 15·4 | 13·6 |
| 1889 | 232 | 280 | 34 | 14·7 | 12·1 |
| 1890 | 235 | 250 | 28 | 11·9 | 11·2 |
| 1891 | 247 | 285 | 35 | 14·2 | 12·3 |
| 1892 | 250 | 290 | 31 | 12·4 | 10·7 |
| 1893 | 245 | 280 | 29 | 11·8 | 10·4 |
| 1894 | 230 | 270 | 27 | 11·7 | 10·0 |
| 1895 | 269 | 325 | 20 | 7·4 | 6·2 |
| 1896 | 271 | 318 | 32 | 11·8 | 10·1 |
| 1897 | 286 | 325 | 18 | 6·3 | 5·5 |
| 1898 | 284 | 329 | 29 | 10·2 | 8·8 |
| 1899 | 292 | 333 | 26 | 8·9 | 7·8 |
| 1900 | 328 | 346 | 35 | 10·7 | 10·1 |
| 1901 | 332 | — | 36 | 10·8 | — |
| 1902 | 337 | — | 36 | 10·7 | — |
| 1903 | 332 | 376 | 29 | 8·7 | 7·7 |
| 1904 | 308 | 370 | 30 | 9·7 | 8·9 |
| 1905 | 354 | — | 41 | 11·5 | — |
| 1906 | 300 Including Ships in Commission in Reserve. | 386 | 28 | 9·3 | 8·2 |

a—*Times, etc.*

**France.** The following are the principal appointments which have been made :—

Vice-Admirals—J. B. Melchior to be a Member of the Superior Council of the Navy and Inspector-General of Torpedo and Submarine Flotillas. F. A. A. Leygue, to be Maritime Prefect of the 3rd Arrondissement Maritime (Lorient). Capitaines de Vaisseau—M. J. Baudry-Lacantinerie, for service at the Ministry of Marine; A. M. Poidloüe, to "Démocratic"; B. S. Sourrieu, to "Gaulois"; F. A. Journet, to "Marceau." Capitaines de Frégate—E. A. Vergos, to "Calédonien"; J. E. Noël, to "Epée" and 2nd Mediterranean Torpedo Flotilla.—*Journal Officiel de la République Francaise.*

---

*The Explosion on Board the "Iéna."*—The Committee of the Senate on the explosion of the "Iéna" have arrived at the following conclusions by a majority of votes :—

1. The first indication of the catastrophy was the sudden appearance of a bright flame of burning B.-powder in the after part of the "Iéna."
2. The flame came from the No. 5 starboard magazine at station 100.
3. At the time of the explosion the doors of the magazines and handing rooms had been closed since 10.30 p.m. on the previous evening, thus, there is no ground for any suspicion of carelessness or foul play.

The deflagration of the B.-powder was assisted by the following unfortunate circumstances :—

1. The magazine was situated under the dynamo compartment, which is always subject to a very high temperature.
2. It had no refrigerating arrangements.
3. The stock of powder was composed of 80 per cent. of old powder, which had previously justly caused uneasiness to Captain Adigard, and concerning which he had made a report.
4. No. 5 magazine had communication with the magazine in which black powder was stored by an opening 15 by 6 (5·9 by 2·3 inches) centimetres large made to facilitate cleaning.

The Committee advise :—

1. That endeavour should be made to introduce a more stable powder, both in the interest of its keeping powers and its ballistics.
2. To introduce in the composition of B.-powder a constituent to give warning of its decomposition which has been advocated for some years past, or to introduce some means by which the bad state of the powder may be made evident.
3. To give the gunnery officers of the ship the right of full control of all powder on board.
4. To arrange some refrigerating apparatus in the magazine capable of keeping the temperature below 23° C. (77° F.).
5. To exclude black powder from all ships, or at least to have the black powder magazine situated as far as possible from the B.-powder magazine.

**France**

*Accident to the "Gymnote."*—The "Gymnote" submarine at Toulon has recently been the victim of a serious accident, apparently due to great negligence.

She was lying in No. 1 Castigneau dry dock at the arsenal, together with the submarines "Thon" and "Y," when, for some reason, the sluices were opened and the dock allowed to fill. The "Thon" and the "Y" rose off the blocks with the water, but not so the "Gymnote," as it appears some valve was open, and she rapidly filled and covered, and remained at the bottom of the dock, the sluices were closed as soon as this was observed, but it was too late to be of much service, and though the dock was at once pumped out the damage caused to the machinery of the "Gymnote" is so serious that it is said she will be of no further use; no one was on board her at the time. The authorities of the dockyard are much blamed for not previously informing the commanding officer of the "Gymnote" of their intention to fill the dock.

The "Gymnote" had a historical interest, as she is believed to be the parent of the modern submarine, having been the first to be constructed by the talented engineer, Gustave Zédé.

---

*M. Lockroy's Letters to the "Temps." No. 10, 14th November, 1906 (continued).*—We need not be surprised if the commission of the Budget is reproached for only effecting economies which are dangerous or misleading. As long as the present dockyard organisation is maintained, and the axe is not applied to the root of the abuses from which the Navy suffers, no real economy can be effected, and such small savings as are realised can only be at the expense of the military value of our arsenals and the national defence.

There are only two ways of effecting economy: either by reductions in the administrative or the military expenditure; we must make our choice. The first demands reform; the second inevitably condemns us to loss of power. The first may preserve us our place among the maritime nations; the second will infallibly cause us to lose it. But, nevertheless, it is towards the second solution that most people lean; it is the easier of the two, does not clash with electoral interests, and can be carried out, so to speak, with a simple stroke of the pen. Meanwhile the country is apathetic and unconcerned, and contents itself with the reflection that all is for the best in the best possible of worlds till the day comes when it is startled to find a great mistake has been made which, as in 1870, it is too late to repair.

As long as we have five arsenals, all complete in every respect, both as fitting-out and building yards, we shall be forced, if we wish to save our money, to diminish the strength of our future squadrons. On the other hand, if we have the courage to specialise our arsenals, retaining two only as building yards—Rochefort and Lorient—and if besides this we are also content with two great military ports for commissioning and fitting-out and repairing our ships, a number quite sufficient for our needs, we shall easily be able to save enough to allow of an extra battleship or its equivalent in other vessels being laid down each year. It would be possible by these means to reduce by nearly one-half the present number of workmen, to abolish certain departments, for which there is no longer any necessity, and to get rid, as Admiral Bienaimé has already demanded, of a crowd of useless vessels in reserve, which are only fit for the scrap-heap.

I know that it frightens many to hear the reduction of the number of workmen suggested, and I have received many letters on this subject. It

France. is said that we ought to keep up a full staff of workmen in peace so as to be ready to meet all the demands of war; but M. Bertin and M. Ferraud have shown that private firms alone can carry out the most important of these repairs, and it is, therefore, not necessary in peace time to maintain our arsenals on a war footing.

The most important of our military ports, and the principal base of operations in the Mediterranean, is Toulon; though rather distant from the probable field of action, its situation on the frontier of our territory, its resources and its defences, which make it practically impregnable, indicate it as an indispensable *point d'appui* for all action, offensive or defensive. Strategy, politics, and nature alike design it as a great fitting-out port for one or more reserve squadrons, where a depôt for seamen and everything necessary for the purpose should be maintained.

A sufficient number of workmen are also always required to meet the needs of the active fleet and repair such damage as our ships may suffer in action or otherwise. But there must be no shipbuiding work. We know by sad experience that new ships given to Toulon drag on from 7 to 8 years on the slips, for the care of and work to be done for the ships of the fleet absorb, under ordinary circumstances, all the efforts of the *personnel* of the yard, and it is only on rare occasions that men can be spared for building work on a cruiser or battle-ship.

On the other side of the Mediterranean lies Bizerta, and here the problem differs. Bizerta, in case of war, will be nearer the centre of operations than Toulon. Placed right on the track between Gibraltar and Port Said, it has a splendid strategical position. Bizerta cannot become a fitting-out port, but it ought to be a repairing port as well as a depôt for an enormous store of coal. Of all our possessions it seems to have the greatest future and the most important *rôle* to play; but as when war is declared it will be impossible to recruit a sufficient number of good workmen in the country, it is necessary that in peace time its *personnel* should be kept complete, and that specialised mechanics should be available. Unfortunately, though all this had been reported on, and was well known, the administration of M. Pelletan suspended for 2 years the development of this important arsenal, and it is only now beginning to recover the lost time.

The *rôle* which Toulon plays in the Mediterranean, Brest plays in the North; placed as it is at the head of a difficult roadstead, the largest, best defended, and finest harbour in Europe, the town has nothing to fear from the enemy. In one direction it commands the ocean, and in another the entry to the Channel; at the extremity of Finisterre it threatens all assailants like a revolver held out at arm's length. Its blockade has always been a difficult operation, Nature having provided three different channels, Le Four, L'Iroise, and Le raz de Sein, traversing a region of rocks and shoals and sandbanks most dangerous to navigation, but affording a means of ingress or egress for our own vessels. Both for offensive and defensive operations it possesses incomparable resources, and is therefore par excellence a port of war. It should therefore be chosen for the concentration of and fitting-out of all our vessels in the West, and there should be a depôt of seamen, reserve, and all the usual staff. If ever war breaks out, Brest will be the first to sight the enemy, and it is from here that we must strike our first blow.

There remains only Cherbourg, which undoubtedly possesses an admirable position from the strategical point of view, and so cannot be neglected. But unfortunately the port was constructed at a time

**France.** of short-range guns, when science had not transformed naval artillery and the art of war. The breakwater ought to be placed at least a kilometre farther out to sea, and the arsenal should have been laid out at the head of the present port in the valley of Yvette. As Napoleon designed it, it now affords no safe protection to a fleet or to isolated ships, but only a precarious refuge for the moment, and though useful to this extent, it can no longer be looked upon as a base for operations in the West or North. In this latter direction we have, alas! nothing except Dunkirk, where a strong flotilla of submersibles might be able to block the channel. Nevertheless, the repairing workshops at Cherbourg should be kept going in peace time, and be made use of in war as far as practicable.

Thus, instead of five arsenals, all kept up on the same expensive footing, we propose two exclusively as building yards, two for fitting-out and commissioning ports, and one to be retained as at best but a hazardous place of refuge in case of defeat.

This is the great reform recommended by the most distinguished officers, and which alone can supply the Budget with the necessary means to maintain France in the rank which she should occupy among the great maritime Powers. Such a reform is, I admit, difficult to institute, as it clashes with interests of long standing, which it is sad to have to interfere with; but the good of the country must be superior to all else.—*Le Temps* and *Le Moniteur de la Flotte.*

---

**United States.** *Result of Navy Target Practice.*—The Pacific Squadron has covered itself with glory in target practice this year. Last year this squadron had the smallest final merit. Now it is at the top higher than all other squadrons. The Second Squadron of the Pacific Fleet, which is commanded by Admiral Swinburne, has won all that it could win. This squadron corresponds to the former Pacific Squadron. It has to its credit the cruiser, gun-boat, and torpedo-boat trophies. There are no battle-ships in the squadron, so that it has no trophy in that class. But better almost than this is the fact that all vessels of the Second Squadron are star-ships, a star-ship being one whose final merit is 85 per cent. of the marks given the trophy winners of her class. The final merit of Admiral Swinburne's men behind the gun is 20 per cent. above that of the men in the next highest squadron. Last year there were three "star" ships, but this year there are ten, and the general average of the ships in final merit is higher. Last year the general average of final merit was 64 per cent. of the highest final merit, and this year it is 71 per cent. It is very clear that some excellent work has been done, and that the spirit of healthy emulation has inspired the best effort of which the men are capable. The result of the various squadrons is shown by the order which follows:

*G.O. 48, June 3, 1907, Navy Dept.*

The Department publishes for the information of the Service the standing of fleets, squadrons, divisions and vessels for the annual record target practice of 1907.

*Standing of Fleets.*

| | | |
|---|---|---|
| 1. | Atlantic Fleet ... ... ... ... ... ... ... ... | 59·346 |
| 2. | Pacific Fleet ... ... ... ... ... ... ... ... | 59·241 |

*Standing of Squadrons.*

| | | |
|---|---|---|
| **United States.** | 1. Second Squadron, Pacific Fleet—"Boston," "Chicago," "Charleston," "Yorktown," "Princeton," "Preble," "Paul Jones" ... ... | 74·866 |
| | 2. Second Squadron, Atlantic Fleet—"Illinois," "Kearsarge," "Kentucky," "Alabama," "Indiana," "Iowa," "Ohio" ... | 62·456 |
| | 3. First Squadron, Pacific Fleet—"Maryland," "Colorado," "Pennsylvania," "West Virginia," "Raleigh," "Chattanooga," "Galveston," "Cincinnati," "Barry" ... ... | 56·555 |
| | 4. Third Squadron, Atlantic Fleet—"Tacoma," "Des Moines"... | 55·515 |
| | 5. Fourth Squadron, Atlantic Fleet—"Paducah," "Dubuque" | 55·383 |
| | 6. First Squadron, Atlantic Fleet—"Missouri," "Maine," "Yankton," "Hull," "Macdonough," "Worden," "Truxtun," "Whipple" ... ... ... ... ... ... ... | 55·096 |
| | 7. Third Squadron, Pacific Fleet—"Concord," "Wilmington," "Paragua," "Pampanga," "Arayat," "Elcano," "Rainbow" ... ... ... ... ... ... ... ... ... | 40·650 |

*Standing of Divisions.*

| | | |
|---|---|---|
| 1. | Fourth Division, Pacific Fleet—"Boston," Princeton" ... | 76·696 |
| 2. | Third Division, Pacific Fleet—"Chicago," "Charleston," "Yorktown" ... ... ... ... ... ... ... | 74·694 |
| 3. | Third Division, Atlantic Fleet—"Illinois," "Kearsarge," "Kentucky," "Alabama" ... ... ... ... ... | 71·600 |
| 4. | First Division, Pacific Fleet—"Maryland," "Colorado," "Pennsylvania," "West Virginia" ... ... ... ... | 58·131 |
| 5. | Sixth Division, Atlantic Fleet—"Tacoma," "Des Moines" ... | 55·515 |
| 6. | Seventh Division, Atlantic Fleet—"Paducah," "Dubuque"... | 55·383 |
| 7. | First Division, Atlantic Fleet—"Missouri," "Maine," "Yankton" ... ... ... ... ... ... ... ... ... | 54·016 |
| 8. | Second Division, Pacific Fleet—"Raleigh," "Chattanooga," "Galveston," "Cincinnati" ... ... ... ... ... | 53·671 |
| 9. | Fourth Division, Atlantic Fleet—"Indiana," "Iowa," "Ohio" | 50·286 |
| 10. | Fifth Division, Pacific Fleet — "Concord," "Wilmington," "Rainbow" ... ... ... ... ... ... ... ... | 47·466 |
| 11. | Sixth Division, Pacific Fleet — "Paragua," "Pampanga," "Arayat," "Elcano" ... ... ... ... ... ... | 32·131 |

*Standing of Torpedo Flotillas.*

| | | |
|---|---|---|
| 1. | Fourth Flotilla—"Preble," "Paul Jones" ... ... ... | 72·017 |
| 2. | Third Flotilla — "Stockton," "Wilkes," "De Long," "Blakely," "Stringham" ... ... ... ... ... ... | 60 019 |
| 3. | Second Flotilla—"Hull," "Macdonough," "Worden," "Truxtun," "Wipple" ... ... ... ... ... ... ... | 57·039 |
| 4. | First Flotilla—"Barry" ... ... ... ... ... ... | 54·408 |

*Standing of Vessels Singly.*

(Star ships are those that attained at least 85 per cent. of the final merit of the trophy winners of their respective classes.)

United States.

*Vessels Competing for the Battle-ship Trophy.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Illinois‡ | ... ... ... | 75·782 | 8. | Missouri | ... ... ... | 59·934 |
| 2. | Kearsarge† | ... ... ... | 75·428 | 9. | Pennsylvania | ... ... | 54·605 |
| 3. | Kentucky† | ... ... ... | 70·832 | 10. | West Virginia | ... ... | 54·119 |
| 4. | Alabama | ... ... ... | 64·357 | 11. | Iowa ... | ... ... ... | 51·585 |
| 5. | Maryland | ... ... ... | 62·178 | 12. | Maine | ... .. ... | 48·797 |
| 6. | Indiana | ... ... ... | 62·153 | 13. | Ohio ... | ... ... ... | 37·120 |
| 7. | Colorado | ... ... ... | 61·623 | | | | |

Counting guns only: "Missouri," 63·975; "Maine," 52·406; "Ohio," 38·045.

*Vessels Competing for the Cruiser Trophy.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Boston‡ | ... ... ... | 79·997 | 7. | Tacoma | ... ... ... | 56 827 |
| 2. | Raleigh† | ... ... ... | 79 382 | 8. | Des Moines | ... ... ... | 54·202 |
| 3. | Chicago† | ... ... ... | 75·468 | 9. | Concord | ... ... ... | 46·557 |
| 4. | Charleston† | ... ... ... | 75·041 | 10. | Galveston | ... ... .. | 38 056 |
| 5. | Yorktown† | ... ... ... | 72·837 | 11. | Cincinnati | ... ... ... | 30·311 |
| 6. | Chattanooga | ... ... ... | 66·935 | | | | |

*Vessels Competing for the Gun-boat Trophy.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Princeton† | ... ... ... | 73·395 | 6. | Paragua | ... .. ... | 36·181 |
| 2. | Wilmington | ... ... ... | 62·130 | 7. | Pampanga | .. ... ... | 32·524 |
| 3. | Paducah | ... ... ... | 57·968 | 8. | Arayat | ... ... ... | 30·514 |
| 4. | Dubuque | ... ... ... | 52·798 | 9. | Elcano | ... ... ... | 29 304 |
| 5. | Yankton | ... ... ... | 51 217 | 10. | Rainbow | ... ... ... | 19·954 |

*Vessels Competing for the Torpedo Trophy.*

(*Guns and Torpedoes both Counted.*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Preble‡ | .. ... ... | 78·822 | 8. | Macdonough | ... ... | 60·418 |
| 2. | Stockton† | ... ... ... | 78 511 | 9. | Worden | ... ... ... | 58·659 |
| 3. | Wilkes† | ... .. ... | 74 061 | 10. | Truxtun | ... .. ... | 56·128 |
| 4. | De Long† | ... ... ... | 72·213 | 11. | Barry... | ... ... ... | 54·408 |
| 5. | Hull† .. | ... ... ... | 70 727 | 12. | Whipple | ... ... ... | 39·265 |
| 6. | Paul Jones | ... ... ... | 65·212 | 13. | Stringham | ... ... ... | 11·568 |
| 7. | Blakely | ... ... ... | 63·743 | | | | |

(*Guns only Counted.*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Hull ... | ... ... ... | 76·544 | 8. | Macdonough | ... ... | 50·215 |
| 2. | Worden | ... ... ... | 71·303 | 9. | Wilkes | ... ... ... | 39·746 |
| 3. | Blakely | ... ... ... | 70·701 | 10. | De Long | ... ... ... | 32·739 |
| 4. | Preble... | ... ... ... | 68·218 | 11. | Whipple | ... ... ... | 19 053 |
| 5. | Paul Jones | ... ... ... | 67·616 | 12. | Truxtun | ... ... ... | 17·775 |
| 6. | Stockton | ... ... ... | 64·969 | 13. | Stringham | ... ... ... | 13·442 |
| 7. | Barry .. | ... ... ... | 54·259 | | | | |

(*Torpedoes only Counted.*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Preble ... | ... ... ... | 92·962 | 8. | Hull ... | ... ... ... | 62·003 |
| 2. | Truxtun | ... ... ... | 85·243 | 9. | Paul Jones | ... ... ... | 62·003 |
| 3. | Wilkes | ... ... ... | 82·640 | 10. | Whipple | .. ... ... | 62 003 |
| 4. | De Long | ... ... ... | 82·082 | 11. | Barry | ... ... ... | 41·273 |
| 5. | Stockton | ... .. ... | 81·896 | 12. | Worden | ... .. ... | 39·685 |
| 6. | Macdonough | ... ... ... | 72·321 | 13. | Stringham | ... ... ... | 10 318 |
| 7. | Blakely | ... ... ... | 62·003 | | | | |

—*U.S. Army and Navy Journal.*

‡Trophy winner; †star ship.

**United States.**

*Designs for the Big Battle-ship.*—The Secretary of the Navy has transmitted to Congress the approved design for the mammoth battle-ship, which was authorised by the Naval Appropriation Act approved on 29th June, 1906, but which Congress stipulated should not be contracted for until it had an opportunity to see the plans for its construction determined upon by the Navy Department. In his letter to Congress transmitting the design selected, Secretary Bonaparte states that immediately after the passage of the Naval Appropriation Act instructions were issued to the Board on Construction of the Navy Department to prepare plans for a battle-ship fulfilling the characteristics named in the Act, and an ample opportunity was given to competent constructors who might desire to do so, to submit, for the Department's consideration, such plans and specifications of a battle-ship as they might desire to present. Secretary Bonaparte says that the Board on Construction submitted four designs, one of which, providing for a battle-ship of 510 feet in length, with officers' quarters forward, was recommended by the Board of Design for adoption, which recommendation, he says, is approved by him. Ten designs were submitted: four by the Navy Bureau of Construction and one each by the Fore River Shipbuilding Co., Wm. H. Douglass, D. F. Black, Newcastle-on-Tyne, England; James Donald, Philadelphia; G. W. Dickie, Camden, N.J.; and draftsmen of the Bath Iron Works. The Secretary, in his letter to Congress, which gives a full description of the design selected, says in part:—

"As will be noted from an examination of the report of the Board on Designs, the 510-foot design of the Board of Construction (officers' quarters forward) was found to be the most suitable of all designs submitted.

"A vessel constructed on this design will carry as 'heavy armour and as powerful armament as any known vessel of its class'; it will have a speed which is believed to be the 'highest practicable' for a vessel of this type and class in the present state of knowledge; it will have 'the highest practicable radius of action,' and can be built within the limit of cost fixed by Congress.

"The principal characteristics of the vessel are: Length on load water-line (about) 510 feet; breadth, extreme, at load water-line (about) 85 feet 2½ inches; displacement on trial, not more than 20,000 tons; mean draught to bottom of keel at trial displacement, 27 feet; total coal bunker capacity (about) 2,300 tons; coal carried on trial, 1,000 tons; feed water carried on trial, 66 tons; speed on trial, 21 knots. Armament: Main battery, ten 12-inch breech-loading rifles; secondary battery, fourteen 5-inch Q.F. guns, four 3-pounder saluting guns, four 1-pounder semi-automatic guns, two 3-inch field pieces, two machine guns, calibre ·30, two submerged torpedo tubes.

"The hull is protected by a water-line belt of armour eight feet in width, whose maximum thickness is eleven inches, and whose cross section is uniform throughout the length of the belt. This belt armour gives effective protection to the boilers, machinery, and magazine spaces, and, most important of all for vessels of this type whose centre of gravity are necessarily very high, affords, in connection with the casemate armour and extensive compartmental sub-division, a reasonable assurance of the maintenance of the stability of the vessel under battle conditions. The side above the main belt armour is protected by armour seven feet three inches wide and a maximum thickness of ten inches. This armour is likewise of uniform cross section throughout, and in length is only slightly less than that of the main water-line belt armour. Above the main casemate armour amidships the side is protected by armour five inches in thickness,

**United States.**

which affords protection to the smoke pipes, the major portion of the secondary battery of 5-inch guns, and the hull structure. Suitable athwartship and diagonal bulkheads are worked at the extremities of the belt and casemate armour, and a protective deck of suitable thickness is provided throughout the length of the vessel, the arrangement and thickness being as indicated in the specifications and plans.

"With particular reference to the offensive qualities of the proposed design, it may be noted that the arrangement of the main battery guns is such as to permit a broadside fire 25 per cent. greater than that of the broadside fire of any battle-ship now built or, so far as is known, under construction, and the average elevation of the axis of these guns above the water-line is believed to be greater than that of any known battle-ship, thus affording a distinct advantage in long-range firing under all conditions of weather.

"With respect to the defensive qualities other than those dependent upon armour protection, the arrangement of the interior structure of the vessel is such as to give the maximum degree of protection to all vital portions by means of unusually effective compartmental sub-division, so that, in conjunction with the armour protection already noted, the defensive qualities of this vessel are believed to be distinctly superior to those of any battle-ship hitherto designed.

"In this connection it may be noted that the percentage of weight allotted to hull and armour is markedly greater than the percentage of such weights allotted to similar purposes in the largest battle-ships now in existence, and the actual total of such weight is, in the proposed design, approximately 3,000 tons greater than in the largest battle-ship so far built.

"The design herewith forwarded provides for a trial speed of 21 knots, and can be arranged for the installation of either reciprocating or turbine machinery, outline specification for both types of machinery having been prepared. Provision is also made for the storage of a large amount of oil fuel without in any degree reducing the capacity of the coal bunkers."

*Launch of the "Salem."*—The new unarmoured scout cruiser "Salem" was successfully launched from the yards of the Fore River Shipbuilding Company at Quincy, Mass, 27th July.

The "Salem" is a vessel of 3,750 tons displacement, and built especially for speed. Her length is 420 feet, breadth 47 feet 1 inch, and draught 16 feet 9 inches. She will be equipped with twin screw turbines, Curtis type, and her estimated speed is 24 knots. She is a sister-ship to the "Chester" and "Birmingham" in general dimensions. So far as engines are concerned, the boats are radically different, and were so designed because of the desire of the Navy Department to test the three types of marine engine now in use; the reciprocating engine, or engine now in general use, which is to be installed on the "Birmingham"; the Parson, or English turbine engine, with which the "Chester" is to be equipped, and the Curtis, or American turbine engine, which the "Salem" will have. Descriptions of the sister-ships of the Salem have already appeared in our columns. Plans are already under way in Salem for the presentation of a suitable gift or gifts to the cruiser "Salem." Just what the gift will be has not been decided. The Salem marine society, composed of ex-ship masters, is also contemplating the presentation of a separate gift to the ship.—*U.S. Army and Navy Journal.*

# MILITARY NOTES.

**Home.** The following are the principal appointments which have been made:—

Lieutenant-Generals—J. H. Wodehouse, C.B., C.M.G., to be General Officer Commanding-in-Chief at Bermuda.

Major Generals—Hon. Sir R. A. J. Talbot, K.C.B., to be Colonel of the 3rd (Prince of Wales's) Dragoon Guards.

Colonels—A. M. Carthew-Yorstoun, C.B., h.p., to Command a Volunteer Infantry Brigade. H. B. B. Walkis, I.A., a D.A.G., to be Major-General. M. H. S. Grover, C.B., I.A., a Brigade Commander, to be Major-General. F. A. Curteis, from Chief Instructor in Gunnery, Southern Command, to be Commander of the Dover Coast Defences.

**Austria-Hungary.** *Manœuvres in 1907.*—Contrary to previous years, manœuvres will this year be held in all the military territorial districts. The two frontier Army Corps, the IIIrd (Graz), and the XIVth (Innsbruck) will carry out grand manœuvres in the vicinity of the Italian frontier in the Gail and Insonzo Valleys. The 3rd, 6th, 18th, and 28th Infantry Divisions and the 22nd and 44th Landwehr Divisions will take part in them, making a total of about 60,000 men. The manœuvres will conclude in the IIIrd, XIVth, Xth, XIth, Vth, VIth, and XIIth Army Corps on the 7th September, in the Ist, IInd, VIIIth, and IXth Army Corps on the 31st August, in the IVth Army Corps on the 11th, and in the VIIth, XVIIIth and XIIIth Army Corps on the 13th September.

*Budget and Effective for* 1907.—By adding up the budgets for the Common Army and the two Landwehrs, and by adding to them the approximate figures of the military expenditure charged to Bosnia-Herzegovina, the following figures are obtained for the entire monarchy[1] (1 krone = 8½d.):

| | Kronen. |
|---|---|
| Common Army Budget... ... ... ... ... | 320,696,583 |
| Austrian Landwehr Budget ... ... ... ... | 47,785,021 |
| Honvéd (Hungarian Landwehr) ... ... ... | 42,663,607 |
| Military Expenses charged to Bosnia-Herzegovina[2] | 5,140,000 |
| Total ... ... ... ... ... ... ... | 416,285,211 |

The total effectives are:—

| — | Officers. | Clerks and Employés. | Rank and File. | Horses. |
|---|---|---|---|---|
| Common Army... ... ... | 16,817 | 5,716 | 292,194 | 72,842 |
| Austrian Landwehr ... ... | 2,953 | 1,006 | 34,436 | 5,472 |
| Honvéd ... ... ... ... | 2,868 | 862 | 28,266 | 6,347 |
| Bosnian troops... .... ... | 360 | 34 | 6,740 | 182 |
| Total .. ... .. | 22,998 | 7,618 | 361,636 | 84,843 |

[1] This does not include exceptional expenditure on loans, pensions, etc., nor the cost of the maintenance of the gendarmerie.

[2] Approximate figures.

**Austria-Hungary.** *Pensions for Widows and Orphans.*—The new Regulation of the 19th March last contains the following important dispositions regarding the pensions of widows and orphans of officers and of the rank and file.

Widows of soldiers, under the following headings, are enttled to a pension :—

1. Pensioned soldiers, or soldiers entitled to a pension on account of length of service (40 years for officers and 18 for the rank and file).
2. Soldiers who have died from the results of sickness or infirmities contracted in the service.
3. Soldiers killed in action, or who died from wounds or fatigue contracted on service. In this case the pensions are increased 50 per cent.

A widow who re-marries loses all right to a pension ; at the same time, on the decease of her second husband, she again becomes entitled to the Military pension, if she is in receipt of no other Government pension.

*Officers' Widows and Orphans.*—The amount of the pension was fixed as follows, commencing from the 1st April, 1907, for the widow of a :—

| | £ | s. | d. |
|---|---|---|---|
| Lieutenant-General ... ... ... | 148 | 8 | 0 |
| Major-General ... ... ... | 106 | 0 | 0 |
| Colonel ... ... ... ... ... | 84 | 16 | 0 |
| Lieutenant-Colonel ... ... ... | 63 | 12 | 0 |
| Major ... ... ... ... ... | 50 | 18 | 0 |
| Captain ... ... ... ... ... | 42 | 8 | 0 |
| Lieutenant ... ... ... ... | 38 | 1 | 6 |
| Sub-Lieutenant ... ... ... | 31 | 16 | 0 |

A proportional rate between the old and new tariff was awarded to widows whose husbands died between the 30th September, 1906, and the 31st March, 1907.

Widows of officers commissioned to exercise a higher rank receive the pension due to that rank. Every lawful child of wedlock receives, up to the age of 24 years, an annual allowance, called "Education Premium," amounting to one-fifth of the widow's pension. This allowance may not exceed £21 8s. 0d. a year, or amount to more than the total amount of the widow's pension, for the whole of the children. Orphans, with neither father or mother, and without resources, are entitled, until they have completed their 24th year, to an allowance equal to half the pension of a widow.

In all cases the amount of the pensions or allowances awarded to widows and orphans may not exceed the amount of pension of which the deceased was in receipt.

*Widows and Orphans of the Rank and File.*—The pension is laid down at the following rates for the widow of a :—

| | £ | s. | d. |
|---|---|---|---|
| Sergeant-Major ... ... ... | 7 | 12 | 0 |
| Sergeant ... ... ... ... | 6 | 2 | 0 |
| Corporal ... ... ... ... | 5 | 1 | 6 |
| Lance-Corporal ... ... ... | 4 | 1 | 0 |
| Private Soldier ... ... ... | 3 | 1 | 0 |

In the case of total incapacity for work the pension is increased by £4 8s. 0d. a year. The widow is entitled, for each child born in wedlock, to a relief of £2 per annum ; this relief is given, as a general rule, up to the

**Austria-Hungary.** age of 16 years for boys, and 14 years for girls. The amount of the pensions and reliefs may not exceed £22 14s. 0d.

For orphans with neither father or mother, and without resources, a relief of £3 2s. 0d. is awarded. In any case the total of the reliefs may not exceed £15 3s. 0d.—*Internationale Revue über die Gesamten Arméen und Flotten, Revue Militaire des Armées Etrangères* and *Bulletin de la Presse et de la Bibliographie Militaires.*

---

**France.** *Organisation on the Moroccan Frontier.*—The protection of the Southern Oran frontiers are entrusted to three quite dissimilar forces, *viz.* : Stationary units, supporting units and mobile units.

*Stationary Units,* as the name denotes, consist of troops permanently stationed at certain judiciously selected points. These are camps or posts where works of all kinds are carried out, such as lines of communication, construction of barracks, boring of wells, setting up telegraph lines, etc. From these posts the troops may, in case of necessity, be directed on to threatened points. They form reliable reserves, always fresh and always ready to march. These reserves always consist, naturally, of regular troops, viz., Foreign Legion, African battalions, and Tirailleurs.

*Supporting Units* are intended to support, and, if necessary, to furnish patrols and light columns. These troops combine the reliability of the stationary units with a comparative mobility. They consist of mounted companies of the Foreign Legion and of companies in light marching order furnished by the 2nd Tirailleurs regiment. The mounted companies are provided with a number of mules sufficient to mount half the effective, the other half, relieved of all equipment, march on foot. The two take it in turn to ride and march, and many wonderful marches have been carried out by them in that manner. The natives of the 2nd Tirailleurs Regiment can, if completely relieved of all impedimenta, and only carrying their arms, rations and ammunition, march under similar conditions, without, however, the help of mules, who only accompany them to carry their indispensable kit. These troops, so trained and organised as to be able to take the field one hour after receiving the order to do so, are intended, when necessary, to lend the support of their numerical force, and value, resulting from the rigid discipline and constant training, to the mobile units.

*The Mobile Units* are intended for scouting, for the service of security at long distances, and the pursuit of the enemy. They are formed by : Sahara companies, Spahi squadrons, mounted Maghzens, dismounted Maghzens, independent groups of Tirailleurs, and mixed groups.

Each of these units has its own use. If it is intended to push forward a bold reconnaisance, or to pursue a flying enemy across sandy and sparsely watered districts, the Sahara companies furnish their *méharites,* who, riding camels, are capable of crossing desert zones in incredibly short time. If operations are necessary in districts where the sun is not so strong, and water more easily obtainable, the Spahi light cavalry and the mounted Maghzens furnish these contingents. As regards the dismounted Maghzens and the independent Tirailleur and the mixed groups of the two combined, they are intended to act in mountainous country and on very steep ground.

The Maghzens are formed from irregular volunteers called *Mokrazenis.* These natives are not bound by any engagement, nor under any regular military discipline.

**France.** The Mokrazeni receives 50 francs a month and a daily ration composed of the following : 700 grammes (rather under 1½ lbs.) of flour, 16 grammes of coffee and 12 grammes of salt. Recruited entirely from the nomads of the high plateaux, he lives in his tent with his family, who tend his flocks.

The mounted *Mokrazeni* provides his own horses and is given 5 kilos (about 11 lbs.) of barley a day for it. He is armed by the military authorities with an 1890 musket with bayonet. He wears no uniform, but wears a blue burnous, as a distinctive badge. The dismounted *Mokrazeni* is similarly armed and equipped.

The independent Tirailleurs groups are formed of specially selected men from the 2nd Tirailleurs regiment, who are best fitted for partisan warfare, that is to say, from the least Europeanised natives. They are armed and equipped according to regulation, but carry no valise, for which they have no use. *Mokrazenis* and Tirailleurs, in the mixed groups, live, march, and fight in a similar manner. When setting out both, including horsemen, carry six days' provisions. The days are entirely devoted to marching, and they do from 45 up to 75 kilometres in one march (25½ to 42¾ miles). These men are led by French officers, who live exactly like them, during the entire course of operations.

---

*Recruiting of the Army.*—A regulation, promulgated on the 10th July last, modifies the dispositions of the regulations of the 24th March, 1905 (see Journal for June, 1906, page 827), as follows :—

1. Discharged soldiers only re-engage for at least three years in the Colonial and Home forces, for a minimum time to enable them to complete four years' service.
2. Re-engagements are renewable up to a total period of 15 years for non-commissioned officers, or former non-commissioned officers of the Home Army, soldiers of all ranks of the Colonial Army, and of the Sappeur-Pompier Regiment of Paris; of eight years for lance-corporals of cavalry and of artillery of cavalry divisions, and of five years for corporals, lance-corporals, and men of the other branches of the Home Army, the duration of the first re-engagement being so calculated as to be reckoned in fractions of a year.
3. Lance-corporals and corporals re-engage, as a rule, in their own corps, or failing that in any corps, as non-commissioned officers (corporals and lance-corporals are not reckoned as N.C.O.'s in France).
4. The number of re-engaged lance-corporals, corporals, and non-commissioned officers is fixed at half the total effective in the cavalry, that of corporals and lance-corporals at a quarter of the total effective in other branches of the service.
5. The man voluntarily re-engaging is entitled to half his bounty on the day of the signature of his engagement; the remainder of the bounty, or any portion of it that he may wish, will be paid him before the expiration of the legal period of service during the third year of his service. The remainder, if any, will be paid either in equal amounts annually, or in a lump sum when the man leaves the service. The part of the bounty making the last instalment is increased by simple interest at 2½ per cent.

**France.**

6. Soldiers who have completed four years' service are excused from two drill periods in the Reserve.
7. Private soldiers who have completed five years' period of service in the cavalry or the artillery of cavalry divisions compete for employments laid down in Table F. with non-commissioned officers, corporals, and lance-corporals.
8. Table G. attached to the regulations is completed by a note, which reads thus:—"The right of preference is given to soldiers who have completed at least four years' service in the cavalry or artillery of cavalry divisions for the following employments, viz.: 2nd-class grooms in horse-breeding establishment (Agricultural Department); mounted gendarmes, including the Garde Republicaine (War Department); sutlers in cavalry and horse artillery corps (War Department); 2nd-class collectors of indirect taxes (Finance Department).
9. Non-commissioned officers who re-engaged under the regulations of the 10th March, 1889, and who are still serving with the colours will be allowed a further extension of two years, during which they will compete for employments noted in Art. 69, and participate in the classification each quarter. Such of these non-commissioned officers who had completed ten years' service on the 21st March, 1905, may be retained with the colours in their rank, however they may be employed, until the expiration of the 20th year of service.—*Armée et Marine* and *Revue du Cercle Militaire*.

---

**Germany.** *Calling Out of Reservists and Men of the Landwehr in 1907*:—

*Prussia.*

As regards the Prussian contingent alone, they are thus distributed:—

| | Men. | |
|---|---|---|
| Infantry ... ... ... | 154,150 | For 14 days. |
| Jaegers ... ... ... ... | 5,970 | |
| Machine-gun groups ... ... | 570 | |
| Field Artillery... .. ... | 28,770 | |
| Foot Artillery ... ... ... | 27,640 | |
| Pioneers ... ... .. | 11,890 | |
| Railway Brigade ... ... | 2,573 | 1,937 Reservists for 28 days.<br>636 Landwehr for 14 „ |
| Balloon Battalion ... ... | 277 | 183 for 28 days.<br>94 for 21 days. |
| Telegraph Troops .. ... | 1,259 | 815 Reservists for 42 days.<br>444 Landwehr for 14 „ |
| Transport ... ... ... | 9,745 | 1,270 for 21 days.<br>8,475 for 14 „ |
| Total ... ... ... | 242,844 | |

These figures do not include complementary reservists for the Imperial Manœuvres, or for the special cavalry exercises, former one year volunteers or cadet officers in certain positions, hospital orderlies, bakers, butchers, telegraphists, balloonists, fortress gunners, etc. Amongst the men called up 21,099 must carry out their training period in an army corps other than that in which they reside. They come, for the most part,

**Germany.** from the IIIrd (8,260 men), and the VIIth (8,790 men) Army Corps, and the remainder from the VIIIth, IXth, and XVIIIth Army Corps.

*Bavaria.*

The same rules are applicable, for the most part, to the contingents of the Bavarian Army. The number of men to be called out in the budgetary year 1907-08, in Bavaria, amounts to 32,993, viz. :—

| | Men. |
|---|---|
| Infantry ... ... ... ... ... | 21,900 |
| Jaegers ... ... ... ... ... | 600 |
| Machine gun detachments ... ... | 50 |
| Field Artillery ... ... ... ... | 3,660 |
| Foot Artillery ... ... ... ... | 3,075 |
| Pioneers ... ... ... ... ... | 1,660 |
| Railway Battalion ... ... ... ... | 378 |
| Balloon section ... ... ... ... | 50 |
| Telegraph detachment ... ... ... | 115 |
| Transport ... ... ... ... ... | 1,505 |
| Total ... ... ... | 32,993 |

*Colonial Troops in Africa.*—The organisation of these troops, modified by the law of the 7th July, 1896, was definitely fixed by the regulations of the 25th July, 1898. The following is a summary of the general features of that organisation (the composition and present distribution of the troops of the various Colonies has already been given in the Military Notes of the Journal for June, 1906, page 830) :—

The protectorate Colonial troops (*Schutztruppen*) are formed by the enlistment of natives with cadres of German officers and non-commissioned officers. To this, however, South-West Africa is an exception on account of the dearth of native recruits, and the troops there consist entirely of Germans, who are either volunteers from the Home Army, or Colonists undergoing their term of military service.

These troops are neither under the War Department, or the Admiralty; they are placed under the direct orders of the Chancellor. The Governor of each Colony disposes of the troops there, whose maintenance is otherwise provided for by the budget of that Colony. All German subjects of sound physical constitution may enter the Colonial service at their request. They select the Colony in which they wish to serve, and contract renewable engagements. They afterwards return to the Home Army. Colonial service entitles them to no special promotion. The Emperor regulates that of the officers according to seniority in the Home Service. That of the non-commissioned officers lies in the hands of the officer commanding the troops of each Colony, but on returning to the Home Army they resume the rank and seniority they had before their departure for Colonial service. It will thus be seen that Colonial service gives merely pecuniary advantages. The pay is doubled and even trebled for lieutenants; a field officer receives £705 per annum; a captain £540 or £480, according to his class; a first-lieutenant £375; a lieutenant £315; a sergeant-major £180; and a sergeant £138. The pay is issued monthly and in advance. In addition, the retiring pension is increased; the Colonial period of service is reckoned double as soon as an uninterrupted term of six months' service has been exceeded.

**Germany.** In all the Colonies German officers, non-commissioned officers and men wear a field uniform of khaki linen. Officers in Togo, the Cameroons and East Africa have, in addition, a uniform of white twill cotton; and cords in South-West Africa. The head-dress is a cork helmet, covered with white flannel, except in South-West Africa, where the Colonial troops retain the soft grey felt hat with blue ribbon and badges, which they wear at home.

The enlistment of natives is regulated by special contracts, the pecuniary advantages of which vary according to the Colonies. For natives of German Colonies these contracts are approved by the Governor; for natives from other districts they are submitted for the approval of the Chancellor. The form of discipline, and the punishment also vary according to the districts, account having to be taken of the customs of the different people. Natives may be promoted non-commissioned officers, or even officers, by the Commander of the troops. These ranks may be withdrawn by the Governor.

The uniform of natives generally consists of khaki linen trousers and jumper; the head-dress is a red fez, in Mussulman countries, with a neck cover of khaki linen. The valise is that of the German infantry. Native officers have, as badges of rank, three gilt stars on their shoulder straps; non-commissioned officers, yellow cloth chevrons on the sleeve, 1 for lance-corporals, 2 for corporals, 3 for sergeants, and 4 for sergeant-majors.

The armament is the 1871 Mauser rifle with short sword bayonet. This out-of-date weapon, which is easily handled, gives excellent results. A repeating rifle would entail a too great waste of ammunition in the hands of natives, who observe hardly any fire-discipline, and who continue shooting until their cartridges are exhausted. The blacks are very proud of their rifle, which they decorate with all sorts of charms.—*Revue Militaires des Armées Etrangères* and *Armée et Marine.*

---

**Italy.** *Manœuvres and Exercises for 1907.*—1. *Grand Manœuvres* will be held in the upper valley of the Navara from the 28th August to the 6th September. The three first army corps will take part in them, with the Piacenza Division and a division of cavalry.

2. *Staff Rides* will be carried out under the direct orders of the Chief of the General Staff.

3. *Cavalry Rides* will be carried out in conformity with the proposals of the Inspector General of Cavalry.

4. *Camps of Instruction.*—All army corps will attend them, including those taking part in the Grand Manœuvres.

5. *Cavalry Camp* will be established at Pordenone in conformity with the proposals of the Inspector-General of Cavalry.

6. *Special Artillery and Engineer Exercises* will be carried out in accordance with the proposals of the Inspectors-General.

7. *Manœuvres of Army Corps Cadres* will be held under the respective direction of the various army corps commanders. Officers of the various staffs, as well as field-officers noted for promotion, will take part in these manœuvres.

8. *Cavalry Cadres Manœuvres* will be held in the Vth, VIth and Xth Army Corps. All officers of the 4th, 5th and 9th Cavalry Brigades will take part in them.

---

*New Rates of Pay for Officers below Field Rank.*—The Italian Government proposes to increase the pay of officers below field rank. The War Minister was authorised to draw up a scheme, according to which the

**Italy.**

following will, in future, be the new rates of pay (100 lire being equal to £4) :—

| | Lire. |
|---|---|
| Sub-lieutenant and bandmaster ... ... ... | 2,000 |
| Lieutenant ... ... ... ... ... ... | 2,400 |
| Lieutenant after 5 years in that rank ... ... | 2,800 |
| Lieutenant after 10 years in that rank ... ... | 3,200 |
| Captain ... ... ... ... ... ... | 3,400 |
| Captain after 5 years in that rank ... ... ... | 3,800 |
| Captain after 10 years in that rank ... ... ... | 4,300 |

Bandmasters have their annual pay increased by 300 lire after each of the four first periods of 5 years' service in that rank; they may thus touch a maximum amount of pay of 3,200 lire.

*Regulations on the Position of Under Officers.* — The rank awarded to sergeants and sergeant-majors by regimental commanders, and that conferred on quartermaster-sergeants by Army corps commanders, constitute the grade of under-officer. The under-officer cannot lose his rank except in cases laid down by law. After three years' service with the Colours the sergeant is entitled to furlough. Should he wish to remain with the Colours, he must, two months before his time expires, prefer his request to his commanding officer, who will decide on the matter after consultation with the Promotion Board. Sergeant-majors and quartermaster-sergeants are entitled to civil employ if they do not leave the Service for disciplinary reasons. Under-officers re-engaged with bounty, and those who are entitled to a retiring pension, may not obtain civil employment. A sergeant-major about to complete 12 years of service should, three months before his time expires, declare in writing to a regularly appointed Administration Board, whether he opts for the continuation of a military career or for civil employ. An under-officer sent on furlough may not be readmitted to the Service, with the exception of under-officers re-engaged with bounty.

The following are the various circumstances of the under-officer on the retired list :

1. *Suspension of rank*, which temporarily deprives an under-officer of his rank and places him in the same position as a private soldier. Whilst it lasts it deprives him of all authority, of the privileges, seniority and badges of rank, as well as of all rights, allowances and advantages which the position of under-officer carries with it. Deprivation of rank is awarded :

(*a.*) For an indefinite period as a measure of precaution towards an under-officer not actually incarcerated and as a means of prevention against the commission of a crime which would lower the prestige of his rank.

(*b.*) To an under-officer in confinement in consequence of a sentence not carrying with it loss of rank.

2. *Despatch on furlough at his request.*—An under-officer who has completed his legal period of service in the Regular Army, may, in the course of his normal service, request to be sent on furlough.

3. *Exemption from service* may be awarded :

(*a.*) For service reasons.

(*b.*) For motives of health.

(*c.*) For disciplinary motives.

(*d.*) For having contracted a religious marriage without being civilly married.

**Italy.**

These measures are not applicable to under-officers who have seen 20 years' service and who, consequently, are entitled to a retiring pension.

Under-officers who have become practically unfit to carry out the duties of their respective rank, or other duties consistent with their rank, may also be recommended for exemption from service.

4. *Reduction.*—Deprives the under-officer of his rank. It reduces him to the ranks, deprives him of all rights, all authority and all prerogatives. An under-officer may be reduced for the following:

(*a.*) Marrying without leave.

(*b.*) Publicly expressing opinions hostile to Government institutions.

(*c.*) Habitual bad conduct when all other means of repression have been exhausted.

(*d.*) Serious crime against discipline.

(*e.*) Dishonourable crime.

(*f.*) Crime against decorum.

(*g.*) Indecency.

(*h.*) Desertion, when the desertion has not been punished as a crime.

Reduction is awarded by the War Minister on the recommendation of a Disciplinary Board, and is registered at the Audit Office.

*Disciplinary Boards.*—The assembly of disciplinary boards is ordered by the commander of the military division on the application of the regimental commander. Army corps commanders and the War Minister may order the assembly of disciplinary boards. There are two kinds of disciplinary boards, *viz.*: regimental and divisional. Regimental disciplinary boards try under-officers of regiments and those detached from them. Divisional disciplinary boards are appointed when crimes have been committed in combination by several under-officers of different regiments. All disciplinary boards consist of 5 officers—a president and 4 members, the junior of whom acts as secretary. The regimental disciplinary board assembles at the headquarters or at the quarters of the detachment to which the incriminated under-officer belongs, and is composed of officers from the headquarters or detachment, who are appointed according to seniority. The formalities laid down for the constitution and the rules of procedure of disciplinary boards are similar to those in force for officers' courts-martial. The reduced under-officer, during the period of special service to which he is bound as an under-officer (3 years), is retained with the Colours until the end of that period; he may, however, request that the duration of his special service be reduced to that to which he would have been normally compelled had he remained with his class. He may also request to be sent on furlough in anticipation, if he is in any way entitled to it.

On the other hand, in order to assist old under-officers who are not entitled to civil employment, the Italian Government undertakes the creation, for them, of positions of sedentary service. In these positions under-officers will fill all those employments in the War Office and in the different military administrations, which are now filled by officers and local assistants. A draft of a law has been submitted to Parliament and has already been examined by a competent commission, who has furnished a favourable report on it.—*La France Militaire.*

**Netherlands.** *New Instructions for the Recruiting of Volunteers.*—Up to the present, men were allowed to enter as Volunteers from 18 to 40 years of age. At the same time, for certain classes the minimum of age might be reduced to 17, 16, 15 and 14 years for cadet sergeants, cadet corporals, musicians, drummers, pupils from preparatory instruction establishments, etc. The period of the enlistments was fixed as follows:—

8 years for youths of less than 17 years of age.
6 „ „ of from 17 to 21 years of age.
3 „ men of more than 21 „

For the mounted branches of the Service, however, youths who had completed their 17th year, and who had not yet attained the age for military service, might also contract engagements for three years. Soldiers, who continued fit for service, were permitted to re-engage for periods varying from one to six years until the age when they became entitled to a pension. Enlisted or re-engaged men were entitled, up to the age of 30, to a bounty, determined as follows, for each year's engagement:—

17 shillings for men of the dismounted and for sergeants of the mounted branches of the Service.

34 shillings for corporals and privates of the mounted branches of the Service, with the exception of cavalry regiments quartered at Deventer and Venloo, for whom the bounty is laid down at £2 10s., as the recruitment of Volunteers is more difficult at these places.

These bounties are payable as soon as the enlistment documents are signed.

According to the terms of the Royal Decree of the 19th January last, the minimum age for Volunteers continues to be laid down at 18 years, and may only be lowered to 16 years for those classes mentioned above. The maximum age limit for the mounted branches and the engineers is 36 years; for the infantry, fortress artillery and medical companies, 40 years. Candidates must be bachelors, be able to read and write, know elementary arithmetic, and be of the required height for the various branches of the Service. The period of engagement is for 10 years (three of which must be passed with the Colours), for the cavalry and engineers, and two for the other branches of the Service. After that period of service with the Colours Volunteers pass into the reserve. Young men of less than 17 years of age may sign to a temporary engagement of one year, on the expiration of which the military authorities may permit them to contract an ordinary engagement.

Volunteers who have completed the usual period with the Colours may be permitted, on their request, to sign successive extensions of service, the period for which is laid down as follows:—

3 years for sergeants, corporal artificers, and corporal cooks.
2 years for corporals.
1 year for private soldiers.

The number of these extensions is not limited, with the exception of corporals who are only allowed to extend their period of service with the Colours on condition that they are nominated for the rank of sergeant on the expiration of their first extension. At the same time, in the engineers, corporals may contract three and eventually four extensions of service if they are considered fit to become sergeants. Volunteers, whose period of service with the Colours has not exceeded two years, may be called up for a maximum period of three weeks of further drill during each of the 5th and 6th years of engagement.

**Netherlands.** From the age of 17 an engagement bounty of £1 5s. is allowed for every year with the Colours in the mounted branches and the engineers, and 17 shillings in the infantry, foot artillery, and medical companies. These bounties are payable every six months in advance.

After completing six years' service with the Colours Volunteers are entitled to a service bounty, the amount of which is laid down as follows :—

| — | Mounted branches and Engineers. | Other Corps. |
|---|---|---|
| | £ s. d. | £ s. d. |
| Sergeants permitted to remain with the Colours | 15 2 6 | 12 11 6 |
| „ not „ „ „ | 12 11 6 | 10 1 6 |
| Corporals ... ... ... ... ... ... | 10 1 6 | 7 11 0 |
| Private Soldiers .. ... ... ... ... | 7 11 0 | 5 0 0 |

An engagement may be cancelled by the War Minister :

1. On condemnation for theft or any other disgraceful act.

2. For persistent misconduct where the person in question is less than 18 years of age.

In every corps or detached portion of a corps a selected sergeant is nominated to gratuitously assist Volunteer candidates, in various duties, such as taking to pieces and putting together the rifle, etc. An annual allowance may, however, be given to this sergeant.

On the other hand, a Royal Decree of the 13th February last lays down that men of the mounted branches who, without contracting an engagement will consent to serve voluntarily beyond the period with the Colours, will receive a bounty of 17 shillings for every half year of such service.—*Bulletin de la Presse et de la Bibliographie Militaires.*

# NAVAL AND MILITARY CALENDAR.

JULY, 1907.

3rd (W.) Kaid Sir Henry Maclean was captured by Raisuli, the Moorish brigand.

15th (M.) H.M.S. "Juno" paid off at Chatham.

16th (T) H.M.S. "Juno" re-commissioned for service in Channel Fleet.

19th (F.) The Abdication of the Emperor of Korea was commenced.

24th (W.) General H.R.H. the Prince of Wales inspected the 4th Bn. King's Royal Rifle Corps at Colchester.

31st (W.) Ten Europeans were massacred by Moors at Casa Blanca.

„ „ Field-Marshal H.R.H. the Duke of Connaught presented new Colours to the 1st Bn. Cheshire Regiment at Lichfield.

# FOREIGN PERIODICALS.

## NAVAL.

ARGENTINE REPUBLIC.—*Boletín del Centro Naval.* Buenos Aires: May, 1907.—"The Preparation for and Commencement of Battle Firing." "The French Navy." Speed and Naval Power."

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 8. Pola: August, 1907.—"The Relations between the Trajectories of Flat-Trajectory Guns." "The Budget for the U.S. Navy, 1907-08." "The Widening of the Kaiser Wilhelm Canal." "The Protection of Ships against Torpedoes and Mines." "The Trials of the "Dreadnought" with New Propellers." "The Cordite Debate in the English Parliament." "French Torpedo Vedette-Boats." "Fiat XV. at the Monaco Meeting." "Kilroy's Warning-Signal System for Gun Turrets."

BRAZIL.—*Revista Maritima Brazileira.* Rio de Janeiro: April, 1907. —"The Problems of the Engineers" (*concluded*). "The Dominion of the Sea." "The Problem of Continuous Electric Waves and Hertzian Telegraphy." "Guns" (*continued*). "Evolution and Tactics of Artillery and Landing Operations" (*continued*). "Artillery Questions" (*continued*). "Battle-ships and Submarines." "The Coast of Brazil" (*continued*).

CHILI.—*Revista de Marina.* Valparaiso: May, 1907.—"The Anniversary of the Glorious 21st of May." "Our Coast Fortifications." "The Scientific Commission in Europe and the United States" (*continued*). "Lessons 1.—The *Materiél* in Naval Tactics. 2.—The Weapon." "The New French and Foreign Battle-ships." "Submarine and Submergible Vessels." "The Dreadnought." "The Entry and Promotion of Officers in the Principal Navies." "The Greasing and Lubrication of Engines" (*continued*).

FRANCE..—*Revue Maritime.* Paris: June, 1907.—"Some Views on the Central Workshops." "Notes on a Special Case of the Method of Equal Attitudes of Stars." "Historical Notice of the Ship "Bonhomme Richard," 1766-1769." "Historical and Anecdotal Notes of New Caledonia, 1774-1878."

*La Marine Française.* Paris: July, 1907.—"The Black Series Continues." "More about the Messageries Maritime and the La Plata Service." "The English are Content with Us." "Some Powders and Explosives in the Navy" (*continued*). "Mine-laying Ships." "The Two-Years' Law in the Navy." "Marine Boilers." "Turbines." "Foreign Navies: The Fear Inspired by cordite." "The Naval Saint-Maixent."

*Le Yacht.* Paris: 6th July, 1907.—"The Commissions of Enquiry into the "Iéna" Catastrophe." "Yachting Notes." 13th July, 1907.—"The Output of Our Dockyards." "Yachting Notes." "The New Regula-

tion for the Medical Corps of the Navy. "The "Zeeslang," the New Netherlands High-Sea Torpedo-boat." "The Turkish Gun-boat "Marmarice." "The Maritime Exhibition at Bordeaux." 20th July, 1907.—"The Grand Naval Manœuvres: The Fournier System of Tactics." "Yachting Notes." "The Medical Corps of the Navy." 27th July, 1907.—"The Naval Manœuvres of 1907." "Yachting Notes." "The Netherlands Armoured Cruiser "Piet-Hein," "In our Dockyards."

*Le Moniteur de la Flotte.* Paris: 6th July, 1907.—"The Great Navies." "The Naval Manœuvres of 1907." "The Navy in Parliament." 13th July, 1907.—"The Naval Manœuvres of 1907" (*continued*). "The Navy in Parliament." "The Congress of Naval Architects." "The Hague Conference." "Gun Accidents." "The Working Plant in Toulon Dockyard." 20th July, 1907.—"The Naval Manœuvres of 1907" (*continued*). "The Navy in Parliament." 27th July, 1907.—"The Naval Manœuvres of 1907" (*continued*). "The "Iéna."

*La Vie Maritime.* Paris: 25th July, 1907.—"The Naval Manœuvres." "A Parliamentary Incident." "The Imperial German Yacht "Hohenzollern." "Our Navy in 1907." "The Automobile Torpedo."

---

GERMANY.—*Marine Rundschau.* Berlin: July, 1907.—"The English Colonial Conference and the Problem of Imperialism." "The Tactics of Admiral Fournier." "The Struggle for Advantage of Position at the Opening of Battle." "Ship's names."

---

ITALY.—*Rivista Marittima.* Rome: July, 1907.—Has not yet been received.

---

PORTUGAL.—*Revista Portugueza, Colonial e Maritima.* Lisbon, July, 1907.—"The Relations of France and Siam." "The Franco-Siamese Treaty of 23rd March, 1907." (*concluded*). "A Colonial Tax" (*continued*). "The Hunting of Wild Beasts" (*concluded*). "Unedited Documents for a History and Geography of Ethiopia." "Genealogical and Biographical Data of Some Fayal Families" (*continued*).

*Annaes do Club Militar Naval.* Lisbon: May, 1907.—"The English Naval Manœuvres of 1906." "The Fighting Value of Submarines." "Naval Notes."

---

SPAIN.—*Revista General de Marina.* Madrid: June, 1907.—"The Battle of Trafalgar" (*continued*). "The Maritime Supremacy of England" (*concluded*). "The Mercantile Marine Chaos." "The Riff and the Ports of Mellila and Chafarinas." "The Results of the Work of Lister in Military Surgery." The Sismograph at the San Fernando Observatory." "The Launch of the French Battle-ship "Vérité." " "Artillery experiences in the Naval Russo-Japanese War" (*continued*). "Meteorological Investigations in a High Atmosphere." "Wireless Telegraphy Experiments in the Naval Training Division." "New Tables of Penetrations."

---

UNITED STATES.—*Proceedings of the United States Naval Institute.* No. 2. Annapolis: June, 1907.—"The Naval Profession." "A General Sales Commissary System for the Navy: The Justice of its Establishment and a Plan for Accomplishing it with Existing Means." "Naval Administration under the Navy Commissioners, 1815-1842." "Systematic Prepara-

tions for Battle." "New Light upon the Career of John Paul Jones." "Description of Paul Jones' Sword." "The Sword presented by Louis XVI. to John Paul Jones." "Armour and Speed." "Changing the Propellers of the U.S.S. "Hopkins" at the Naval Station, Key West." "Effect of Movement of the Gun Platform on the Trajectory." "Electrical Installations of the U.S. Navy."

## MILITARY.

ARGENTINE REPUBLIC.—*Revista Militar.* Buenos Aires: April, 1907.—Has not yet been received.

AUSTRIA-HUNGARY.—*Danzer's Armee - Zeitung.* Vienna: 4th July, 1907.—"Change in the List of Senior General Officers." "New Contributions to the Infantry Attack." "Julius Cæsar's Investment of Fortresses with Fortified Turrets by the Employment of Iron." "From the Good Old Times" (*continued*). 11th July.—"A Reorganisation of the Dismounted Branches without Raising the Recruit Contingent." "New Contributions to the Infantry Attack." "From the Good Old Times" (*concluded*). "English Views on the Use of the Automobile in War." 18th July.—"Japan and the United States." "New Contributions to the Infantry Attack" (*continued*). "Enquiry into the Catastrophe to the "Iéna," and its Consequences for the French Navy." "French Opinions on the Employment of Motors in War." 25th July.—"Socialism and the Army." "Daily and Vital Artillery Questions." "New Contributions to the Infantry Attack" (*concluded*).

*Streffleurs Militarische Zeitschrift.* Vienna: July, 1907.—"The Annexation of Dalmatia." "On the Training of the Skirmisher, the Troop Leader, and Section Commander." "On the Sphere of Action of Siege Howitzer Divisions." "Water Motor Vessels for Pioneer Troops." "On the Causes of the Russian Defeats, according to General Martynow." "The Amur Railway." "Intelligence from Foreign Armies." "Naval Intelligence."

*Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens.* Vienna: July, 1907.—"The Field Artillery Concealed Position." "The Principles for the Supply of Modern Armies as shown by the Russo-Japanese War." "Artillery Patrols." "Is the Decomposition of Nitric Acid Explosives possible through Fungi?"

*Kavalleristische Monatshefte.* Vienna: July, 1907.—"The Fitting-out of the Cavalry with Machine Guns." "Squadron Training in Germany and in Austria-Hungary." "Cavalry Machine Gun Groups." "Manœuvres in Reconnoitring and Skirmishing." "The Efficiency of the Russian Cavalry and Cossacks in the Russo-Japanese War." "The Attack of the Trani Uhlans at Custoza, 1866." "Training and Terrain." "American Riding Methods and the Riding of the Rank and File." "The Training in Equitation of the Russian Cavalry Officer." "Criticism of the English Thoroughbred according to Bruce Lowe's Calculations."

*Organ der Militar-wissenschaftlichen Vereine.* July, 1907.—Has not been received.

BELGIUM.—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th July, 1907.—"The German Infantry Drill Regulations of

the 29th May, 1906" (*concluded*). "The Russo-Japanese War" (*continued*). "The German Imperial Manœuvres of 1906." "The Social Sphere of the Officer." 31st July, 1907.—"The Russo-Japanese War" (*continued*). "The German Imperial Manœuvres of 1906" (*continued*). "The Social Sphere of the Officer" (*continued*).

*Revue de l'Armée Belge.* Liège: May-June, 1907.—Has not been received.

---

FRANCE.—*Le Spectateur Militaire.* Paris: 1st July, 1907.—"Grand Autumn Manœuvres in 1906" (*continued*). "Field Service Exercises for Officers" (*continued*). "An International Garrison—Canea" (*continued*). 15th July.—"Grand Autumn Manœuvres in 1906" (*continued*). "Field Service Exercises for Officers" (*continued*). "An International Garrison—Canea" (*continued*). "The Channel Tunnel" (*continued*).

*Revue du Service de l'Intendance Militaire.* Paris: June, 1907.—"Report on Rubber Wrappers." "The Soldier's Ration" (*continued*). "The Geology and Hydrology of Tiaret."

July, 1907.—Has not been received.

*Revue du Cercle Militaire.* Paris: 6th July, 1907.—"A Matter of a General Order in Italy—The Grey Squad." "Marseilles and her Roadstead up to the Revolution" (*continued*). "Medical Statistics of the French Army for 1904" (*concluded*). 13th July.—"On the new Field Artillery Organisation." "The Career of the German Officer." "Marseilles and her Roadstead up to the Revolution" (*concluded*). "The School at Joinville." 20th July.—"An Involuntary Tourist." "On the new Organisation of Field Artillery." "The Trophies of France." 27th July.—"Simplification of Infantry Formations." "Position of Re-engaged Non-commissioned Officers prior to the Law of 1906." "An Involuntary Tourist" (*continued*).

*Revue Militaire des Armées Etrangères.* Paris: July, 1907.—"The Reorganisation of the Japanese Army." "The Belgian Grand Manœuvres of 1906." "The English Military Forces in 1907."

*Revue Militaire Generale.* Paris: July, 1907.—"The New German Field Artillery Regulations." "Some ideas on the Battle Preparation of an Infantry Company" (*continued*). "Study of the Military Character of Marshal Davout" (*continued*). "Spicheren, the 6th August, 1870" (*continued*). "Employment of Machine Guns by Infantry."

*Revue du Genie Militaire.* Paris: July, 1907.—"Works of Sapping and Mining Executed by the 1st Company 7th Battalion of Russian Sappers in Manchuria." "Aeroplanes—Their Movement and Stability." "Determination of a given Section of a Trihedral."

*Revue d'Artillerie.* Paris: May, 1907.—"Protected or Non-protected Artillery." "Relation between the Striking Force of Bullets and the Gravity of the Wounds they can Inflict." "Calculation of Musketry Tables to the Angle of Elevation."

June and July, 1907.—Has not been received.

*Revue d'Histoire.* Paris: July, 1907.—"The first Machine Guns, 1342-1725." "The Campaign of 1794 with the Army of the North" (*continued*). "The War of 1870-71" (*continued*).

*La Revue d'Infanterie.* Paris: July, 1907.—Has not been received.

*Journal des Sciences Militaire.* Paris: July, 1907.—Has not been received.

*Revue de Cavalerie.* Paris: July, 1907.—Has not been received.

GERMANY.—*Militär-Wochenblatt.* Berlin : 2nd July, 1907.—"Kolberg, 1807." "The Attack over Open Country." "Particulars regarding the Calling up of the 1885 Class of Recruits in Italy." 4th July.—"Kolberg, 1807" (*concluded*). "The King's German Legion, 1803-1816." "The new Bearer Company Regulations." "On the Article "Changes of Objectives by Field Artillery from Covered Positions."" 6th July.—"The Siege of Port Arthur." "Nauticus, 1907." "The French Company Ammunition Wagon." 9th July.—"The Siege of Port Arthur" (*concluded*). "New Problem of Communication in Asiatic Russia." "The *Times* History of the People's War in South Africa." "From the Netherlands Forces." 11th July.—"The Frontier Fortifications between Italy and Austria-Hungary." "The Measurement of Portions of Country in Completely Concealed Fire Positions with the aid of a High-angle Plane Table." "Intelligence from the French Army." 13th July.—"The Existing Results and the further Prospects of Russian Army Reform." "The Range Limits of Field Guns from Concealed Positions." "Intelligence from the French Army." 16th July.—"A Report on the Military Events from the 15th to the 18th August, 1815." "The Existing Results and the Further Prospects of Russian Army Reform" (*continued*). "On the Value of Jumping Competitions for Officers." "The Italian V.C.A." 18th July.—"Anniversary Fête." "China : Increase of Military Strength." "Parallel Range-Finder." "From the United States Army." 20th July.—"In the Russian Camp in Manchuria." "China : Increase of Military Strength" (*concluded*). "Night Signalling." 20th July.—"The new Draft of the Russian Infantry Drill Regulations." "Organisation of Machine Gun Groups in the Austro-Hungarian Army." "Chinese Military Schools." 25th July.—"The Tactics of Siege Warfare." "On Aiming Implements." "The Composition of Light Ammunition Columns." 27th July.—"The new Field Artillery Firing Regulations." "New Problem of Communication in Asiatic Russia." "The Measurement of Lateral Distances on Changes of Target by Field Artillery from Concealed Positions." 30th July.—"On the French Infantry Tactics in the Battles in August, 1870." "Letters to a Young Officer." "The Existing Results and further Prospects of Russian Army Reform" (*continued*).

*Internationale Revue über die gesamten Armeen und Flotten.* Dresden : July, 1907.—"Military and Naval Intelligence from Austria-Hungary, Belgium, China, France, Germany, Great Britain, Italy, Russia, Switzerland, Turkey, and the United States." *Supplement 88.*—"The Present Position of Military Ballooning." *French Supplement 100.*—"The Lessons of the Russo-Japanese Naval War from an Artillery Point of View" (*concluded*). "The New Field Artillery Drill Regulations." "Independent Line of Sight and Independent Sighting Apparatus for Howitzers." "What Cavalry Lessons may be Drawn from the Russo-Japanese War?" "Ammunition Supply; Expenditure and Supply Infantry Ammunition : Some Considerations based on the Events of the Russo-Japanese War."

*Jahrbücher für die Deutsche Armee und Marine.* Berlin : July, 1907.—"Port Arthur According to German and Austrian Opinion." "On the Tactics of Present-Day Artillery in the Attack in Conjunction with the Other Arms." "The Training of Commanders of Troops in Strength of Will." "Field Service Pamphlets as a Means for the Training of Non-Commissioned Officers in Field Duties." "On the History of the Prussian Engineer and Pioneer Corps." "Langensalza." "Military Writing." "A Description of the Internal Conditions of the Russian Army by a General of the Russian General Staff."

*Artilleristische Monatshefte.* Berlin: July, 1907.—"The New Field Artillery Firing Instructions." "On the Psychology of Troop-Leading." "New Sighting for Field Howitzers." "Field Artillery, Exposed, Covered, or Partially Covered." "Foot Artillery Considerations." "On the Introduction of Barrel-Recoiling Guns and Machine Guns in the Italian Army." "Do we Know the Black Berthold?"

*Neue Militärische Blätter.* Berlin: June, 1907.—No. 25.—"Military Foreign Outlook." "Austro-Hungarian Formations for Mountain Warfare." "The Purchase of the Infantry Officer's Horse" (*continued*). "On the Subsistence, Health Precautions and Clothing of Troops and Travellers in the Tropics" (*continued*). "Military Intelligence." No. 26.—"The Death of the Prussian Lieutenant-Colonel von Gaudy in the Battle at Rudersdorf on the 28th June, 1866." "The Glorious Share of the Senior Prussian Infantry Regiment (No. 1 Graf Kunheim), in the Campaigns of 1805 and 1806, under Blücher, and the Downfall of the Regiment" (*continued*). "The Purchase of the Infantry Officer's Horse" (*continued*). "New Torpedo-Boat Stations." "On the Subsistence, Health Precautions and Clothing of Troops and Travellers in the Tropics" (*concluded*). "Military Intelligence."

July, 1907. No. 1.—"The Hague Peace Conference." "The Glorious Share of the Senior Prussian Infantry Regiment (No. 1 Graf Kunheim) in the Campaigns of 1805 and 1806, under Blücher, and the Downfall of the Regiment" (*continued*). "The Present Position of the Non-Commissioned Officer in Russia." "The Purchase of the Infantry Officer's Horse" (*concluded*). "Care of Teeth in the Army." "Military Intelligence." No. 2.—"Intelligence from the French Army." "The Glorious Share of the Senior Prussian Infantry Regiment (No. 1 Graf Kunheim) in the Campaigns of 1805 and 1806, under Blücher, and the Downfall of the Regiment" (*continued*). "Military Foreign outlook." "The German Military, Naval and Colonial Exhibition." "Military Intelligence." No. 3.—"The Hague Peace Conference" (*continued*). "The Glorious Share of the Senior Prussian Infantry Regiment (No. 1 Graf Kunheim) in the Campaigns of 1805 and 1806, under Blücher, and the Downfall of the Regiment" (*continued*). "St. Helena." "The Increase of Field Artillery in France." "The New German Firing Instructions for Field Artillery." "Military Intelligence."

---

ITALY.—*Rivista di Artiglieria e di Genio.* Rome: June, 1907.—Has not yet been received.

*Rivista Militare Italiana.* Rome: July, 1907.—Has not yet been received.

---

PORTUGAL.—*Revista de Engenheria Militar.* Lisbon: May, 1907.—"Antonio Sarmento da Fonseca." "Military Works." "Some Remarks on the Report of Engineer Rego Lima on His Mission to the Mines of Cassinga in 1898" (*continued*). "Something about Barracks." Some Remarks on the Armament of Coast Batteries."

*Revista Militar.* Lisbon: May, 1907.—"The National Defence." "Maritime Power." "A Chronicle of the English Army." "Portable Tools for Infantry" (*continued*). "Posthumous Biography of Lieut.-Colonel E. Costa."

*Revista de Infanteria.* Lisbon: July, 1907.—"Machine Guns" (*continued*). "The Recruiting of Officers for Service Oversea" (*continued*). "Vital Questions." "Manœuvre Regulations for Groups of Machine-Guns

in the German Army" (*continued*). "Sergeants" (*continued*). "Military Administration." "Promotion to Lieutenant."

---

RUSSIA.—*Voiënnyi Sbòrnik.* St. Petersburg: July, 1907.—Has not been received.

---

SPAIN.—*Memorial de Ingeniéros del Ejército.* Madrid: June, 1907.—"The Day of San Fernando." "The Engineers' Museum at Rome and the Restoration of the Castle di San Angelo." "International Wireless Telegraphy Conference at Berlin." "The Minister of War and the Madrid Industrial Exhibition." "The Construction of the Panama Canal by Military Engineers."

*Revista Técnica de Infantería y Caballería.* Madrid: 1st July, 1907.—"Military Science in Athens (Lectures by Colonel Marva): The Automobile Torpedo." "Military Courts in France." "Relations between Armament and Tactics" (*continued*). "The Army and New Ideas." "Cavalry and Musketry Instruction" (*continued*). 15th July, 1907.—"Military Science in Athens (Lectures by Colonel Marva): Torpedoes Against Ships' Bottoms." "Relations between Armament and Tactics" (*concluded*). "The Army and New Ideas" (*concluded*). "Cavalry and Musketry Instruction" (*concluded*). "The Hague Conference."

*Revista Cientifico-Militar y Bibliotéca Militar.* Barcelona: July, 1907. "Firing Instruction and Fire Superiority in Infantry." "The Grey Company." "Let us Work." "Positions for Artillery." "The Drills of Reservists in the German Army."

---

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: July, 1907.—"Attack of Fortified Field Positions in Manchuria." "An Opinion of Aiming Apparatus." "Study on the Re-organisation of Engineers." "Hygienic Measures for Military Marches."

---

UNITED STATES.—*Army and Navy Life.* New York: July, 1907.—"Origin and Development of Breach-loading Small Arms." "Modern Military Rifles." "The Small Arms Ordnance Exhibit at the Jamestown Exposition." "Our Native Troops." "Transportation of Rations in the Field in the Philippines." "Where White Man Never Trod." "The Island of Panay." "The Relation of the Re-organised Militia to Coast Defence." "The Chance of the Coast Artillery."

*Journal of the United States Infantry Association.* Washington: July, 1907.—"Notes on Field Service in Samar." "The Army in the San Francisco Disaster." "The Peace Training of Armies." "What does the Infantry want?" "Some Things our Infantry Requires." "Translation."

*Journal of the Military Service Institution.* Governor's Island, N.Y.H.: July, 1907.—"The Limitation of Armaments." "Military Conditions in U.S. and Japan—A Comparison." "Problem of the Supremacy of Fire." "Map-Making and Topography." "Cooking Schools in the Organised Militia." Transmission of Military Intelligence." "Recollections of the Battle of Santiago." "Types and Traditions." "Translations and Reprints."

*Journal of the United States Artillery.* Fort Monroe, Va.: May-June, 1907.—"The Visual Fatigue of Gun Layers." "Notes on Crusher Gauges, Pressure Cylinders, and Tarage Tables." "The Combat between Coast Batteries and Ships' Guns." "The Use of the 12 in. Mortar in the Land Defence of Coast Fortifications." "The Gavre Commission: A Historical Sketch of the Progress of Exterior Ballistics." "Professional Notes."

*Journal of the U.S. Cavalry Association.* Fort Leavenworth, Kansas: July, 1907.—"Australian Horses for the Philippines." "The Strategic Use of Cavalry." "The Signal Corps in Manœuvres." "Desertions and the Enlistment Oath." "Is the Garrison Ration Sufficient for a Good Mess?" "The Pennsylvania Constabulary." "Riding to Hounds with Cavalry Officers in Germany." "Rifle Practice in Competition Work for the Cavalry." "Is the Rifle a Cavalry Arm?" "The proposed New Cavalry Pack." "The Issue of Clothing." "Horse Flesh as Telegraph Wire." "Field Wireless Outfit." "Reprints and Translations." "Prize Problems." "Military Notes."

## NOTICES OF BOOKS.

*Fredericksburg.* By Major G. W. REDWAY. London: Swan, Sonnenschein & Co., Ltd., 1906.

In this, the third volume of a very useful series of campaign studies, the author relates how very nearly Lee and his lieutenants, aided by the colossal blunders of the Federal leaders, won the cause of the Confederacy. On the subject of what one side called the Rebellion, the other the War of Secession, there is now an immense mass of material, a very great deal having become available quite within recent years, and Major Redway has devoted much time and no inconsiderable skill to sifting the information at command and welding the whole into a very vivid and effective story. The author is, perhaps, at his best in dissecting the extraordinary orders issued by Burnside to his subordinates, and in describing the intentions of the commander and the interpretation which might be or which actually was given to his operation orders. There is a very excellent study of the "American soldier: his social status and his professional ability," and in this chapter there are many interesting sidelights on the characteristics of the men in the ranks who did the actual fighting, when "on one side at least the generals were of little account, and serve only to show . . . . how largely the blundering experiments in war of inefficient leaders are redeemed by the resolute and intelligent fighting of tactical units."

These studies of the great struggle fill one with increased admiration for the fighting qualities of both sides; but we may perhaps be permitted to regret that the North did not, like the South, confine the struggle at least to the men of the white races. Major Redway's criticisms are very fair and marked by a just appreciation of the nature of war in general and of this phase in particular, while his narrative is not too technical. The appendices are interesting, and the maps clear and satisfying.

*Magenta and Solferino.* By Colonel H. C. WYLLY, C.B. Crown 8vo. Price, 5s. (Swan, Sonnenschein & Co., Ltd.) London, 1907.

Although the campaign of 1859 has been hitherto much neglected by English military writers, and the indecisive and often ill-directed operations of the campaign do not make particularly interesting reading, yet two features of the triangular duel of 48 years ago in Northern Italy repay study.

The invention and development of railways have, above all modern discoveries, affected the conduct of war; and the concentration of the

French Army in April, 1859, afforded, as has been pointed out by the military correspondent of the *Times*, the first indication of their commanding influence on strategy.

Within a month of the departure of the first troop-train from Paris the French Army at the front numbered 150,000 men, 28,000 horses, and all accessories; and in 86 days (20th April to 15th July) 220,000 French troops were taken by rail from their peace garrisons into the heart of Lombardy.

This achievement of the Southern French railways enabled Napoleon III. to obtain his successes and to frustrate the intentions of the slow-moving Austrian commanders to crush the Piedmontese and capture their capital before their ally could come to the rescue.

In addition to the instruction which students of war derive from a study of this early concentration of an Army by railway, another feature of the war of 1859 deserves the most grave consideration of Englishmen.

As the author shows, the course of the war was one of success for French arms; yet before the Austrians were thoroughly defeated the French Emperor found it advisable to make overtures for peace. This decision was, no doubt, partly attributable to pressure on the part of the Northern German States; yet, as Colonel Wylly states, "a study of the events of the war and of the various considerations which led to the somewhat unexpected determination to make peace, leads one to the conviction that, while a lavish expenditure on the outbreak of war can so far repair the neglect of years of peace and plenty that Armies may be improvised for a campaign of short duration, neither hurried organisation nor make-shift Armies are equal to a protracted effort, or to oppose the forces of those who have used the long years of peace to prepare for the days of war."

False economy in peace, followed by lavish expenditure on the outbreak of war is an epitome of English military history; a fact which lends a peculiar value to Colonel Wylly's study of the campaign of Magenta and Solferino. The incidents of the campaign itself are not perhaps of an absorbing interest, for no leader of conspicuous talent appeared in any of the Armies engaged, nor were the fighting qualities of the troops very highly tested, in spite of fairly heavy losses sustained by the combatants on both sides. Victory fell to the Armies furnished with the best subordinate leaders, as is, perhaps, generally the case, and a campaign of tactical rather than strategical triumphs is by no means unworthy of study by students of the art of war.

To such we can commend Colonel Wylly's book, in which the author has made good use of somewhat scanty materials. Colonel Wylly writes in a clear style, and the volume under review forms a useful addition to the "Special Campaign Series," for which students are indebted to Messrs. Swan, Sonnenschein & Co.

---

## PRINCIPAL ADDITIONS TO LIBRARY DURING JULY, 1907.

*Cavalry Studies, Strategical and Tactical.* By Major-General D. Haig. 8vo. 8s. 6d. (Presented.) (Hugh Rees, Ltd.) London, 1907.

---

*The Indian Army: A Sketch of its History and Organisation.* Crown 8vo. Oxford, 1907.

---

*Exerzier—Reglement für Feld-Artillerie.* 12mo. 2s. (E. S. Mittler & Sohn.) Berlin, 1907.

*La Manœuvre de Lützen, 1813.* By Le Colonel LAUREZAC. 8vo. 8s. 4d. (Berger-Levrault et Cie.) Paris, 1904.

*Notes for the Tactical Fitness Examination.* By Major A. T. MOORE. 8vo. 2s. 6d. (Presented.) (Hugh Rees, Ltd.) London, 1907.

*Field Service Pocket-Book.* (Provisional.) (Official.) General Staff, War Office. Crown 8vo. 1s. (Harrison & Sons.) London, 1907.

*General Lee: His Campaigns in Virginia, 1861-1865.* By W. H. TAYLOR. 8vo. 9s. (Nusbaum Book & News Co.) Norfolk, Va., 1906.

*1866: The Campaign in Bohemia.* By Lieut.-Colonel G. J. R. GLÜNICKE. Crown 8vo. 5s. (Presented.) (Swan, Sonnenschein & Co., Ltd.) London, 1907.

*The Evolution of the Submarine Boat, Mine, and Torpedo, from the Sixteenth Century to the Present Time.* By Commander M. F. SUETER, R.N. 8vo. 21s. (J. Griffin & Co.) Portsmouth, 1907.

*Les Ordres de la Couronne de Fer et de la Couronne d'Italie, 1805-1905.* By Le Capitaine J. L. KŒCHLIN. Royal 4to. 24s. (Plon-Nourrit et Cie.) Paris, 1907.

*Subject Classification.* By J. D. BROWN. 8vo. 15s. (Library Supply Co.) London, 1906.

*The Operations of War Explained and Illustrated.* By General Sir E. B. HAMLY. New edition, brought up to the latest requirements, by Colonel L. E. KIGGELL, Assistant Director of Staff Duties at Headquarters. 4to. 30s. (William Blackwood & Sons.) Edinburgh and London, 1907.

*Butler's Rangers: The Revolutionary Period.* By E. CRUIKSHANK. 8vo. Welland, 1904.

*The Fight in the Beechwoods: A Study in Canadian History.* By E. CRUIKSHANK. 8vo. Welland, 1895.

*The Battle of Lundy's Lane, 25th July, 1814.* By Captain E. CRUIKSHANK. 3rd edition. 8vo. Welland, 1893.

*The Battle of Queenstown Heights.* By Lieut.-Colonel E. CRUIKSHANK. 8vo. Welland, 1904.

*The Siege of Fort Erie, August 1st—September 23rd, 1814.* By Lieut.-Colonel E. CRUIKSHANK. 8vo. Welland, 1906.

*The Documentary History of the Campaign upon the Niagara Frontier in the Year 1813. Part III. (1813). August to October, 1813.* Collected and Edited for the Lundy Lane Historical Society by Lieut.-Colonel E. CRUIKSHANK. Part VII. 8vo. London, 1906.

*Scouting and Reconnaissance in Savage Countries.* By Captain C. H. STIGAND. 8vo. (Hugh Rees, Ltd.) London, 1907.

*The Re-Shaping of the Far East.* By B. L. PUTNAM WEALE. 2 vols. 8vo. 25s. (Macmillan & Co., Ltd.) London, 1905.

JUST PUBLISHED. Price, 8s. 6d. net; post free, 8s. 10d.

# CAVALRY STUDIES:

## STRATEGICAL AND TACTICAL.

**By Major-General DOUGLAS HAIG, C.V.O., C.B.,**
**LATE INSPECTOR-GENERAL OF CAVALRY IN INDIA.**

WITH NUMEROUS MAPS AND SKETCHES.

HUGH REES, LIMITED, 119, PALL MALL, LONDON, S.W.

## ARMY TUTORS.

**CAPTAIN GALL**
AND
**MR. GLADSTONE, M.A.** (Oxon.)
(Late Captain Gall)

**90a, GLOUCESTER ROAD, SOUTH KENSINGTON.**

Latest Successes—
**MILITIA COMPETITIVE.**

MARCH, 1907—2nd and 45th Infantry.
OCTOBER, 1906—First place on List, also 3rd, 11th, and 35th places.
MARCH, 1906—First Artillery and NINE other places.

SANDHURST, 1907—25th place.
PROMOTION—In 1906 all Candidates passed.
ORDNANCE COLLEGE—4th place.
ARMY QUALIFYING—All passed.

*WORK ALWAYS GOING ON.*

Preparation
By Lectures or Correspondence.

*Telephone*—2485 Kensington.

## SCHOOL OUTFITS
.. AT ..
## Moderate Charges

Suits
Overcoats
Shirts
Underwear
Boots
Hats
Hose
Trunks, &c

FROM

**SAMUEL BROTHERS, LTD.,**
**65 & 67, Ludgate Hill, London, E.C.**

**ESTABLISHED SEVENTY YEARS.**

Assortments *forwarded on approval to any part of the country.*
Appointments *kept in London & Suburbs free of charge.*
Illustrated Catalogue *and Patterns post free.*
The "Wear-Resisting" Fabrics (Regd.)—*Speciality for Boys' Hard Wear*

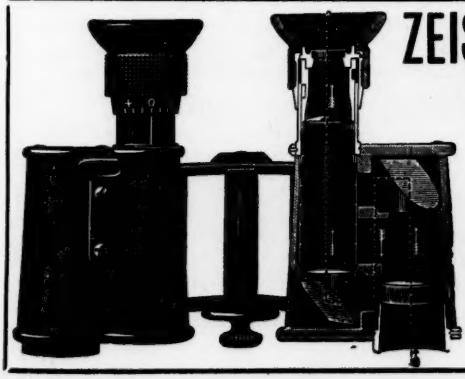
Dunkeld and Birnam Station.

**BIRNAM HOTEL, BIRNAM,**
**PERTHSHIRE, N.B.**
(Two minutes' walk from Birnam and Dunkeld Station.)
*HIGH-CLASS FAMILY HOTEL.*

Tariff Moderate. Pure, bracing air. Finest Scenery in Scotland. Good Salmon and Trout Fishing free. Golf Course adjoins Hotel Grounds. Good Garage and Inspection Pit.

## "R.U.S.I. JOURNAL" INDEX.

An index to Subjects and names of Authors appearing in the JOURNAL from 1887 to 1906 (Vols. XXXI. to L.) has been compiled, and may be obtained at a cost of one shilling (inclusive of postage) on application to the Secretary, Royal United Service Institution, Whitehall, S.W.



## ZEISS FIELD GLASSES

**WITH ENHANCED STEREOSCOPIC EFFECT.**

**x 6, £6 0 0 x 8, £6 10 0**

**Special Types for Hunting, Marine Work, &c.**

*Illustrated Catalogue "Ty." post free on application.*

**CARL ZEISS, JENA.**

BRANCHES:
**LONDON, 29, MARGARET STREET, REGENT STREET, W.**
Berlin, Frankfort o/m, Hamburg, Vienna, St. Petersburg.

## TWO INTERESTING BOOKS.

# "RAIDS."

Price 1/- net; Post Free, 1/2.

# "CONSCRIPTION AVOIDED."

Price 1/- net; Post Free, 1/2.

**LORD ROBERTS says:—**

"All interested in the Defence of this Empire should read these important books."

**LONDON: THE GILBERT-WOOD PRESS,**
**3 & 5, Arundel Street, W.C.**

THE

# ROYAL ENGINEERS JOURNAL.

**This Journal contains Articles on engineering matters, both military, tecanical and civil, and on general military topics. Transcripts and Notices from the technical publications of Foreign Armies are also contributed.**

The Journal is issued free to all Members and Associate Members of the Royal Engineers Institute. All officers of the Royal Engineers (Regulars) serving and retired, are eligible for membership. The following may be Associate Members: Officers of the Royal Artillery, of the Home Militia and Volunteer Engineers; and of the Permanent, Militia, and Volunteer Engineers of all the Colonial Forces.

***MONTHLY: PRICE 1s. 6d. Nett.***

London:
C. GILBERT-WOOD, Arundel Street, W.C.

Chatham:
THE ROYAL ENGINEERS INSTITUTE.

**JUST PUBLISHED, Price, 2s. 6d. net; post free, 2s. 9d.**

**NOTES FOR THE**

# TACTICAL FITNESS EXAMINATION

BY

**Major A. T. MOORE, R.E.**

Revised to meet the latest Regulations governing the Examination, the new Organisation of the Field Army, and the recent amendments to *Combined Training*.

Contains Hints for the Examination, Hints on Tactics, and some sample Schemes with Solutions.

Will a'so be found very useful for Staff Rides.

HUGH REES, LIMITED, LONDON, S.W.

## SWAN, SONNENSCHEIN & CO.'S BOOKS.

# THE SPECIAL CAMPAIGN SERIES

**Specially designed to meet the requirements of Candidates for ARMY EXAMINATIONS. 5s. NET EACH.**

**Vol. I.**

**FROM SAARBRUCK TO PARIS.**
By Lieut.-Col. SISSON PRATT. With 10 Sketches and Maps.

**Vol. II.**

**THE RUSSO-TURKISH CAMPAIGN, 1877.**
By Major F. MAURICE, *P.S.C.* (The Sherwood Foresters). With 3 Maps.

**Vol. III.**

**THE FREDERICKSBURGH CAMPAIGN, 1862.**
By Major G. W. REDWAY. With Maps and Plans.

**Vol. IV.**

**THE CAMPAIGN OF MAGENTA AND SOLFERINO, 1859.**
By Col. HAROLD WYLLY, C.B. With Maps and Plans.

**Vol. V.**

**THE WATERLOO CAMPAIGN.**
By Lieut.-Col. SISSON PRATT. With Maps and Plans.

**Vol. VI.**

**THE CAMPAIGN IN BOHEMIA, 1866.**
By Lieut.-Col. GLÜNICKE. With Maps and Plans.

**SWAN, SONNENSCHEIN & CO., LTD., 25, High Street, Bloomsbury, W.C.**

## THE ART OF RECONNAISSANCE.

By Colonel DAVID HENDERSON, D.S.O. With Diagrams. Crown 8vo. 5s.

This work is a guide to the study of reconnaissance in the field under modern conditions of war, and deals with the practical details as well as with the theoretical principles of the subject.

## FORTIFICATION:

ITS PAST ACHIEVEMENTS, RECENT DEVELOPMENTS, FUTURE PROGRESS. By Sir GEORGE S. CLARKE, R.E., K.C.M.G., F.R.S. New Edition Enlarged. With numerous Illustrations. Medium 8vo. 18s. net.

A CHEAP EDITION. 3s. 6d. net.

## BEFORE PORT ARTHUR IN A DESTROYER.

The Personal Diary of a Japanese Naval Officer. Translated by Captain R. GRANT, D.S.O. With Maps and Illustrations. Square 8vo.

"It is pre-eminently a book to be read for enjoyment as well as instruction; but it will fall short of its more immediate value if measures are not devised for bringing it before the attention of those responsible for the education of 'youngsters' in training for a sea life."—*Pall Mall Gazette.*

JOHN MURRAY, ALBEMARLE STREET, W.

An Expert Opinion of the

# BUSCH 'TERLUX'

## PRISM BINOCULAR.

**3** TIMES MORE LIGHT.

**The Best Glass for Military and Naval Officers.**

**For use in various Climates on dull as well as fine days Winter and Summer.**

**Admiral Lord Charles Beresford's opinion:**

"Lord Charles has been looking through a pair of Busch Glasses which had engraved on them, PRISMA BINOCLE 'TERLUX'; Lord Charles during his long experience at sea has never before looked through so good a pair of Glasses."

AND LATER:—H.M.S. "Bulwark," Mediterranean, August 20th, 1906.

"DEAR SIRS,—I have a pair of your Prism Binoculars and they are certainly far the best Glass I have ever used."—Yours faithfully, CHARLES BERESFORD, Admiral.

**OF ALL OPTICIANS.**

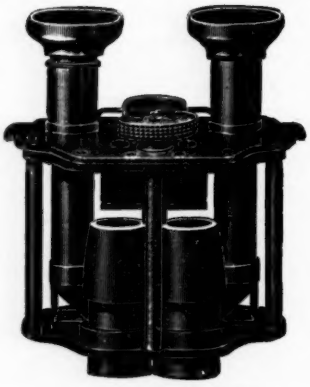
**EMIL BUSCH OPTICAL CO.,** 35, CHARLES STREET, HATTON GARDEN, LONDON, E.C.

# DALLMEYER'S

## NEW PRISMATIC BINOCULARS

## "The Service."

**For Naval and Military Officers and Sportsmen.**



**For Travellers, Naturalists, and for Theatre use.**

*Patent.*

**Showing "Service" Binocular with outer cover removed for cleaning prisms.**

**LIGHTNESS.**—They weigh about 2 oz. less than any other glasses of similar power.

**DURABILITY.**—Prisms fixed in rigid frame can be easily adjusted if necessary, although it is practically impossible for them to get out of alignment.

**CONVENIENCE.**—Can be focussed, adjusted, &c., while holding in one hand.

*Illustrated Booklet Free on application.*

**J. H. DALLMEYER, Ltd., 25, Newman St., London, W.**

THE

# Cavalry Journal

Published with the sanction of the Army Council and under the direction of Lieut.-General R. S. S. BADEN-POWELL, C.B.

**Published Quarterly, Price 2/6 net. Postage 4d.**

**NOW READY. No. 7.—JULY, 1907. NOW READY.**

**CONTENTS.**

Coloured Frontispiece—The 16th (The Queen's) Lancers in South Africa. By Major C. DIXON.
Cavalry: it's Possibilities and Limitations. By Major G. de S. BARROW, 4th Cavalry, I.A.
The Mounted Men of New Zealand, Past and Present. By Colonel J. BABINGTON, C.B., C.M.G.
Fathers of Indian Cavalry. By "EQUES."
Horse Grenadiers. (Illustrated). By Lieut.-Colonel R. M. HOLDEN, 4th Bn. The Cameronians.
Kelleman's Charge at Maringo. (With Maps). By Major-General J. C. RUSSELL.
Machine Guns with Cavalry. By Capt. R. V. K. APPLIN, D.S.O., 14th Hussars.
With a Squadron of Cavalry and the Jhansi Camp Exercise. By Capt. R. E. HOGG, Central India Horse.
Illustration of the New War Office, and the Statue of H.R.H. The Duke of Cambridge.
Suggested Training for Scouts. By Capt. G. A. WEIR, 3rd Dragoon Guards.
Cavalry Organization. A Suggestion by Major C. B. BULKELEY-JOHNSON, Scots Greys.
German Views on Mounted Infantry. Translated.
The Necessity of Training an Officer to Ride by Night. Translated.
Cavalry Ideas in the Spectateur Militaire.
What Cavalry Should Learn from Manchuria.
The Armament of the Servian Cavalry. (Illustrated).
Problem No. IV. (With Map).
Problem No. III. Result.
Recent Publications.
Notes. (Illustrated).
Sporting Notes.

SUBSCRIPTIONS should be sent direct to:—

The Managing Editor at

**THE ROYAL UNITED SERVICE INSTITUTION, WHITEHALL, LONDON, S.W.**

or Copies may be obtained by ALL Booksellers, Newsagents and Railway Booksellers, from

**THE GILBERT-WOOD PRESS, 3 & 5, ARUNDEL STREET, STRAND, LONDON, W.C.**

Telephone Nos. 4680 & 4680A GERRARD. Telegraphic Address:—"GILBERWOOD, LONDON."

# The Journal of the Royal Artillery.

THIS Journal, which was formerly known as the "Proceedings" of the R.A. Institution, contains articles and information on Artillery matters, some highly technical and some general. Articles on general Military topics also appear.

In the Translations and Précis, which are an important feature, an attempt is made to keep up with the progress of Artillery on the Continent.

All members of the Royal Artillery Institution receive the Journal.

Any officer serving in the Navy, Army, Militia, Imperial Yeomanry, Volunteers and Colonial Permanent Forces can receive this Journal post free on application to the Secretary, R.A. Institution, at an annual subscription of 20*s*.

WOOLWICH: ROYAL ARTILLERY INSTITUTION.

*Single Copies, price 2s. 6d. each, postage extra.*

Sole Advertisement Contractor, **C. Gilbert-Wood,** Dacre House and Granville House, Arundel Street, Strand, W.C.

*Telegrams*:—"GILBERWOOD, LONDON." *Telephone*:—4680 Gerrard.

Connoisseurs of **COFFEE**

DRINK THE

# RED WHITE & BLUE.

DELICIOUS FOR BREAKFAST & AFTER DINNER.

In making, use LESS QUANTITY, it being much stronger than ordinary COFFEE.

---

SEWAGE PURIFICATION.

## The SEPTIC TANK System.

For MANSIONS, COUNTRY HOUSES, VILLAGES and TOWNS.

EXTENSIVELY ADOPTED BY H.M. WAR OFFICE.

THE SEPTIC TANK CO., LTD., 1, VICTORIA STREET, WESTMINSTER.

---

TELEPHONE: 4430, GERRARD.
TELEGRAMS: CAPTAINCY, LONDON.

MILICODE USED.

## HAWKES & COMPANY,

14, PICCADILLY, LONDON,

Military and Civil Tailors and Outfitters,

HELMET, CAP AND ACCOUTREMENT MAKERS.

Original Manufacturers of the Cork Patent Helmet.

---

Estd. **C. GILBERT-WOOD,** 1894.

Newspaper Proprietor, Publisher, Lithographic & Letterpress Printer, Advertisement Contractor, etc.

Sole Advertisement Contractor for:—

"The Cavalry Journal,"
"The Royal Navy List,"
"The Journal of the Royal United Service Institution,"
"The Indian Volunteer Record,"
"The Journal of the United Service Institution of New South Wales."
"The United Service Gazette."
"The Royal Engineers Journal,"
"The Journal of the Royal Artillery,"
"The Gibraltar Directory,"
"The Naval Handbook,"
"The Naval and Military Review."
"The Naval Pocket Book," etc., etc.

**Dacre House and Granville House, Arundel Street, Strand, LONDON, W.C.**

TELEPHONES:—4680 Gerrard; 4680A Gerrard; 92 Holborn;
Registered Telegraphic Address: "GILBERWOOD, LONDON."

THE ADVERTISEMENT DEPARTMENT OF THIS JOURNAL IS CONDUCTED IN GILBERT-WOOD'S ADVERTISING OFFICES, DACRE HOUSE, ARUNDEL STREET, STRAND, LONDON, W.C., WHERE ALL COMMUNICATIONS SHOULD BE ADDRESSED.
TELEPHONE NO. 4680, GERRARD.